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B. BURGESS, Captain,
Secretary.

Whitehall Yard,
December, 1885.

The Journal
OF THE
Royal United Service Institution.

VOL. XXIX. 1885. No. CXXXII.

Wednesday, July 8, 1885.

VICE-ADMIRAL W. GORE JONES, C.B., in the Chair.

EXAMPLES OF MILITARY OPERATIONS IN MADAGASCAR BY FOREIGN POWERS AND NATIVE CAMPAIGNS, 1642—1881.[1]

By Captain S. PASFIELD OLIVER, F.R.G.S., &c., late Royal Artillery.

The CHAIRMAN: Ladies and gentlemen, a somewhat small attendance to-day does not prevent the lecture being one on one of the most interesting topics that could be brought before an English audience at this moment. If there is one country in the whole world more than another in which England is interested, it is Madagascar. In the first place it is a very wonderful strategical position in the Eastern seas, and although we have not chosen to take possession of it or to make any use of it, it is absolutely necessary that no enemy of ours should ever get it. The first effect of such a hostile occupation would be our disappearance from the Mauritius and from all our sugar plantations, and everything that comes from that Colony. The people could not sustain themselves without Madagascar, they get all their food and the necessaries of life from there; for that reason alone it is absolutely necessary to England. And not only the Mauritius, but the whole of the islands of that Archipelago are dependent upon Madagascar. Then comes the great strategical position in case of war. Our friends the French have an eye to strategical positions. There is a great bay at the northern part of the island called Bembatoka Bay, where all the fleets in the world might anchor, and that is, I believe, the position they chiefly want. Thence they could interrupt the whole of our Eastern commerce. The other day, before the French business occurred, I was thinking of joining a company myself to work the trade of Madagascar, and I have just a few notes here that would be worth reading. The island has a population of about 3,000,000; it is 818 miles long by 300 miles broad, and, situated between 12° 2′ and 25° 40′ south latitude, is almost entirely within the tropics. It rises from both sides to an altitude of about 4,500 feet above the sea level by a series of plains and plateaus, some of which are from 30 to 40 miles wide. The geographical position and topographical configuration render its soil capable of yielding the most valuable tropical and sub-tropical products, such as coffee, cotton, indigo, sugar, rice; and it is not improbable but the tea-plant may find its home there also. They grow those products in a manner far superior to the Mauritius, for the Mauritius is getting somewhat worn out. The silk produced in Madagascar is of the finest quality, of which beautiful specimens were presented to the Queen on the occasion of the Envoy's visit. A band of forest owned by the

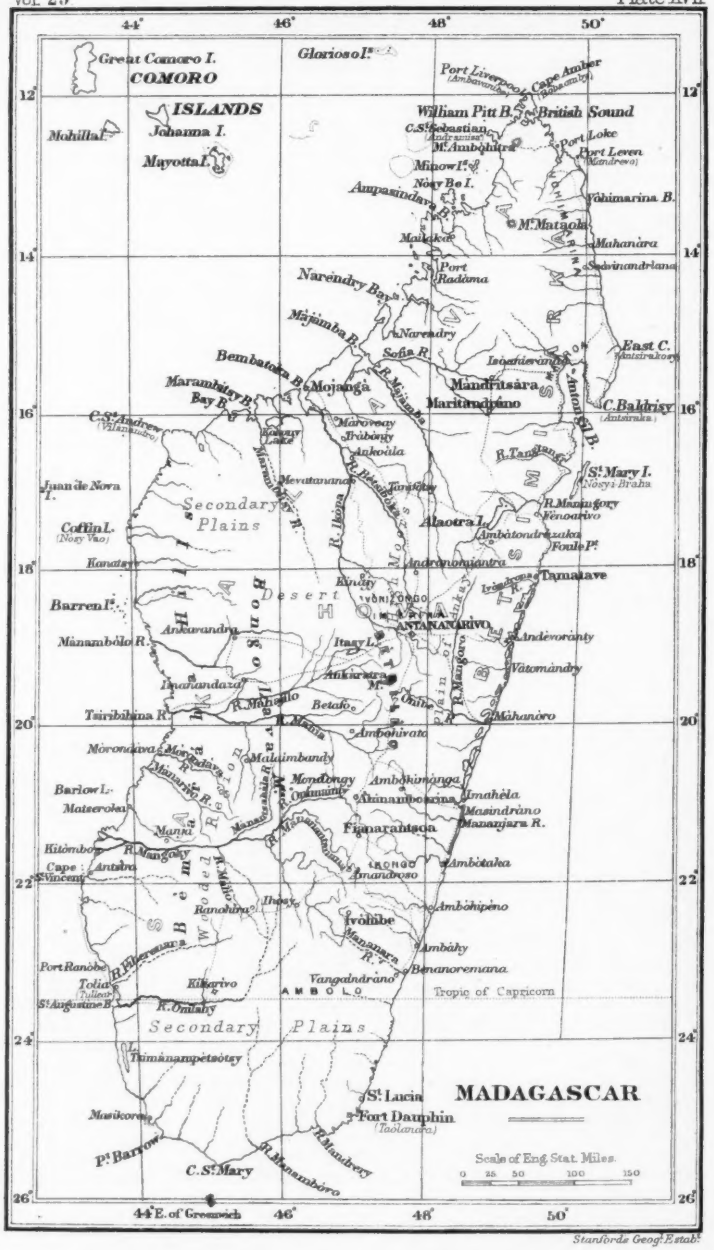
[1] The Institution is indebted to Messrs. Macmillan for the use of the accompanying map prepared for their forthcoming work on Madagascar by Captain Oliver.—ED.

Government, and from 10 to 40 miles wide, encircles the island. Besides other timber, it comprises ebony, rose, sandal, and other fancy woods. While the plains of Imerina and some other portions of the island are thoroughly cultivated, large tracts of valuable land remain untilled and uninhabited, as for example the region known as "no man's land." Extensive pasture lands also occur, over which roam herds of cattle, in which there is an extensive trade, large numbers being exported to Mauritius, Réunion, and even to Natal. There is in fact no country in the world where cattle are so cheap as in Madagascar. Fat bullocks can be put on board ship at 40*s.* to 44*s.* per head, or at about 1*d.* per pound. Cattle are cheap in the island because there are no droughts, and because the grazing grounds are well watered and inexhaustible. Now these grazing grounds are but one month's sail distant, and surely they may be rendered available for the supply of meat to the United Kingdom. The geographical position of the island from a commercial standpoint is most important. It is about midway between the Cape of Good Hope and Aden, and about seven days' sail from the Red Sea. Mauritius is 500 miles distant. Its southern end lies about 700 miles E.N.E. of Natal, and, its whole length, Madagascar lies off that part of the coast of East Africa in which most interest is felt. In fact it bears the same relation to that great continent that Great Britain does to Europe, and when brought, through Christianity and commerce, into a higher state of civilization, will exercise upon the African negro an important influence. The French call Madagascar, on account of its position, the future storehouse of the Indian Ocean. That position certainly will give it an important and commanding influence over the African coast-trade from Zanzibar and Natal. With respect to sugar, a large trade is now carried on from Mauritius, as well as from that island to Bombay, the exports being in 1880–81 as follows:—Bombay, 38,470*l.*; Australia and New Zealand, 45,640*l.*; Cape ports, 6,298*l.* against 15,643*l.*; to the United Kingdom. Sugar can be as profitably produced in Madagascar as in Mauritius, and the growth of our Australian Colonies must naturally always secure an enlarging demand for the great staple, in the supply of which Madagascar may reasonably hope largely to share. The truth of the matter is, it is new soil, and the Mauritius is not, and its capabilities are very great. Now I have not come here to give a lecture myself, so I will come to a conclusion, and I have great pleasure in introducing the lecturer of the day, Captain Oliver, who knows a great deal about the country, and I have no doubt will give us an interesting description of everything that he proposes to bring before you.

Captain Oliver: I must ask the indulgence of the audience this afternoon, if they will allow me to refer to the absence, through death, alas! of my much-valued friend Admiral John Crawford Wilson, R.N., whose sudden death has taken all his friends by surprise. He would have been here this afternoon had his duties permitted him, and in fact, possibly would have taken the chair. His interest in the Malagasy[1] was great, and his position as a well-known member of this Institution, apart from his well-known career in the Royal Navy, is sufficient to draw from us all a tribute of sincere heartfelt grief at the loss which this Institution has sustained by his death at the very period when his country looked upon him to fulfil the expectation formed from his former strict and stainless life of honour. Doubtless the shock sustained by his voluntary entrance into the engine-room of H.M.S. "Thunderer" when the explosion took place gave an additional strain on his constitution which has probably contributed towards his untimely death. I must also lament the loss of another friend of Madagascar, Lieutenant H. Horace Hayes, First Lieutenant of the "Bacchante," who gave me a great deal of information about Madagascar, and whose voyage down the east coast of Madagascar has eventuated in his death. He died on the 13th June.[2]

[1] Admiral Wilson commanded H.M.S. "Gorgon" in 1862–63, and conveyed the British Mission (of which Captain Oliver was a member) to and from Tamatave. He also visited the west coast, and contributed a paper on the Sàkalàva tribes to the Royal Geographical Society's Proceedings. (See "Notes on the West Coast of Madagascar," R.G.S. Journal, vol. xxxvi, p. 244.)

[2] Lieutenant Henry Horace Hayes, R.N., died on board the P. and O. steamer


MADAGASCAR
COMORO ISLANDS
Great Comoro I.
Glorioso Is.
Mohilla I.
Johanna I.
Mayotta I.
Port Liverpool
Cape Amber
William Pitt B.
British Sound
C.St Sebastian
M.Amphitra
Port Loke
Port Leven
Minow Is.
Nosy Be I.
Ampasindava B.
Vohimarina B.
M.Matavola
Mahaniara
Malekeke
Port Radama
Narendry Bay
Majamba B.
Naverdry
East C.
Sofia R.
Bembatooka B.
Mojanga
Mandritsara
Marambitsy R.
Bay B.
Maritsandriano
C.Baldrisy
C.St Andrew
Juan de Nova I.
Secondary Plains
Mevatananna
Tamitave
Alaotra L.
Coffin I.
Ambàtondrazaka
Foule Pt.
Kanatsay
Andranomiantra
Barren Is.
Desert
Ankavandra
Itasy L.
Andévoranty
Mánambólo R.
Vátomándry
Ankarátra M.
Betafo
Tsiribihina R.
Ambohivato
Máhanóro
Mórondava
Malaimbandy
Barlow L.
Matseroka
Mandrare R.
Ambohimánga
Imahéla
Ifanarahtsoa
Masindrano
Manantsara R.
Manri
Kitómbo
Cape Amboro
Ambóhimahasoa
Ambitaka
Ranohira
Ihosy
Ambohipeno
Ivohibe
Port Ranobe
Tolia
Kilkarivo
Vangaindrano
Benanoremana
St Augustine B.
R.Onilahy
Tropic of Capricorn
Secondary Plains
Thiminampetsotsy
St Lucia
Fort Dauphin
Taolanaro
Mandcore
Pt Barrow
C.St Mary
R.Manambaro
Scale of Eng. Stat. Miles.
0 25 50 100 150
44° E. of Greenwich
Stanford's Geog.l Estab.t

I.—Earliest French Operations during the Seventeenth Century.

The subject on which I treat this afternoon does not carry us back further than the seventeenth century, when the attention of European nations was turned generally to colonial expansion and the acquisition of unoccupied territories.

La Société de l'Orient.—Armand Duplessis, Cardinal Richelieu, during the latter days of Louis XIII, established the *Société de l'Orient*, five months before his own death in December, 1642, for the express purpose of founding a permanent Colony in Madagascar, or Saint Laurent, as the island was then named. The letters patent granting a concession of the island of Madagascar and adjacent islets to the company were signed in the following year, 1643, by Louis XIV.

First French Settlements.—Pronis, a Huguenot, and Fouquembourg first established the small French Colony at St. Lucia; but the unhealthiness of the locality caused the speedy removal of the settlement to a peninsula at the south-east corner of the island where they built Fort Dauphin.

From the very outset misfortune attended the French efforts at colonization in the island. Not only was the mortality excessive, but religious differences caused the Catholic troops and colonists to revolt against the Huguenot chief.[1] Pronis was deposed and confined by the mutineers until rescued by a reinforcement from Europe. On the occurrence of a second outbreak of insubordination, Pronis managed to subdue the rising, and deported the ringleaders to the Grande Mascareigne (now Réunion), but he was superseded by the Sieur de Flacourt, who was sent from La Rochelle to take command of the Colony in 1643.

De Flacourt's Expedition.—De Flacourt aimed at reducing the whole of Madagascar to a state of subjection, and soon after his arrival took advantage of some slight provocation to send an expedition of eighty men under Sieur Angeleaume to destroy the town of Fanshere. On this occasion the Chief Dian Ramach was slain, and the villages and property throughout the district pillaged and burnt. The Roandrians, or petty kings of the tribes as far as St. Augustine's Bay, were all subdued or overawed, and submitted to pay tribute to the French at Fort Dauphin. Nevertheless the settlement was neglected by the home authorities; during the seven years of De Flacourt's administration no supplies were sent from France; and in 1653, the charter of the Society having expired, De Flacourt returned to Europe, leaving Pronis again in charge of the establishment at Fort Dauphin.

"Venetia," off Suez, on 13th June, 1885, invalided from H.M.S. "Bacchante." When belonging to H.M.S. "Tourmaline" he was especially mentioned by Captain R. Boyle, R.N. (now of H.M.S. "Iron Duke"), for his boat voyages on the east coast of Madagascar during the French blockade in 1884.

[1] Pronis is accused of selling publicly to Van der Mester, Governor of Mauritius, a number of natives engaged in the service of the French Colony, including sixteen women, relations of Malagasy chiefs. These unfortunate slaves, on arriving at Mauritius, fled to the woods and mountains, where they became Maroons.

In 1655, Fort Dauphin was burnt, and the next Governor sent out by the reconstituted Society was M. Chamargou, who arrived at the settlement in 1660. The fort was rebuilt and the houses reconstructed by 1663.

Victorious Enterprise of La Case.—La Case, the lieutenant of Chamargou, was despatched by the Governor to reconnoitre the district of Matitana, a mission which he carried out with intelligence. The real name of the young Officer was Le Vacher, a native of Rochelle; he had taken the name of La Case as a *nom de guerre* on joining the expeditionary forces of the *Société de l'Orient* as a soldier of fortune. On his arrival at Fort Dauphin he found that the relations between the French and the natives of the island were of the most unfriendly description, and he recognized the necessity of re-establishing the reputation of the French Colonists among the neighbouring tribes. After several victorious engagements La Case gained by his tact and valour such an influence over the southern tribes that the Malagasy named him Dian Pousse, the title of a great chief reputed to have conquered the whole island, and whose memory and posthumous name were held in veneration by the warlike people. The sovereign of the fertile province, Ambolo, Dian Rassitate, offered his daughter, Andrian Nong, in marriage to La Case, who with five of his companions had left the French Colony disgusted by the conduct of Chamargou. On the death of Dian Rassitate, La Case was elected chief of his wife's tribe, and speedily became master of a large portion of the island.

Meantime the establishment of Fort Dauphin was reduced to the greatest straits through sickness and famine, until their necessities were relieved by supplies of rice and beef which were furnished by La Case.

Chamargou, having received reinforcements from France, waged another cruel war against the tribes of Carcanosy, and the murder of a French missionary by Dian Manangue, Chief of Mandrerey, led to sanguinary reprisals. A detachment of forty Frenchmen was cut off and massacred by a chief, La Vatangue, and Chamargou himself led all the available men he had against Dian Manangue. Dian Manangue assembled a force of, it is said, 6,000 men to dispute the passage of the river Mandrerey against Chamargou, and the French would doubtless have been destroyed, had not La Case, accompanied by 3,000 Malagasy of Ambolo, attacked the tribesmen of Dian Manangue, and covered the French retreat to Fort Dauphin. Even then the garrison would have been starved had not La Case convoyed 5,000 bullocks into the fort which was blockaded by Dian Manangue.

La Compagnie Orientale.—Under the auspices of Colbert a new company was formed, on the model of the English East India Company, in 1664, to which all the rights of the *Société de l'Orient* over the island of Saint Laurent, were transferred. This company was named *La Compagnie Orientale*, and the island of Madagascar received the name of *Ile Dauphine*. This last name, however, was not preserved, for we find that in the following year, 1665, this island was re-named *La France Orientale*, and M. de Rennefort

assumed the reins of its government. The first act of the new company was to send a sword of honour to La Case, together with his commission as Major; in return for which that Officer pledged himself that if a force of 200 Frenchmen were placed under him he would conquer the whole island, and establish the permanent authority of the King of France throughout Madagascar.

In 1667, the Comte de Mondevergue arrived with a fleet at Fort Dauphin, and, by the assistance of La Case, an arrangement was arrived at with the powerful chief, Dian Manangue, who swore fealty to the French Governor-General, and undertook to keep the garrison supplied with provisions. The grand *Compagnie Orientale*, however, failed through the maladministration of the funds, and Madagascar became a Crown Colony under the Viceroy, Admiral de la Haye.

Admiral de la Haye.—Admiral de la Haye impeached the former Governor de Mondevergue (who died of chagrin, a prisoner at Saumur), and instituted at once an aggressive policy. Determined to overawe the neighbouring chiefs who would not acknowledge his authority, he ordered Chamargou and Major La Case to summon Andrian Ramousay to surrender all the arms in his possession. The summons not being complied with, Chamargou and La Case attacked the chief's town with 700 French and 600 native allies. Andrian Ramousay, however, made a stout resistance, and repulsed the French attack. It was believed that Chamargou behaved treacherously on this occasion, and contrived the failure of the assault.

Admiral de la Haye finding that his force was insufficient to cope with the natives, left his command and sailed for Surat. His departure was shortly followed by the death of La Case, whose name and reputation for valour alone kept the islanders in subjection to the French. Their conduct had become intolerable to the Malagasy tribes, who only awaited a suitable opportunity to rid themselves of the foreigners. On the death of Chamargou, his son-in-law, Le Bretesche, succeeded as Governor, but finding his authority disregarded by those beneath him, he also took advantage of a ship putting in to Fort Dauphin to embark himself, family, and a few followers. The ship had no sooner set sail than a signal of distress was observed on shore. The Captain sent off his boats, which succeeded in rescuing a few individuals remaining after a dreadful massacre effected by Dian Ramousay and the other chiefs. This tragic event took place, it is said, at midnight on Christmas Eve, when the French were attending service in the chapel without the gates of the fort, December 25, 1672. No French establishment was again posted on the shores of Madagascar for upwards of a century.

Remarks on the French Operations during the Seventeenth Century.—From the "History of Madagascar," written by M. de Flacourt, we are enabled to form an accurate estimate of the state of the natives in the southern portion of the island, with whom the Frenchmen of the seventeenth century had to deal. We find that the tribes of Anosy, and the Ambolo Valley, the Machicora and the Mahafali, the Tsienim-

balala, and Antaisaka, preserve to this day all the characteristics of their ancestors, and are not in the least changed in their manners and customs from what they were when they were first intruded upon by foreigners. The tribes of the south end of the island of Madagascar, outside the tropic of Capricorn, belong to that branch of the Malagasy which includes the people now known as the Sàkalàva (or *long tongues*).

M. de Flacourt describes these people, their social condition, and surroundings minutely, and they perfectly agree with the modern accounts of the southern and western Sàkalàva given by the Jesuit missionaries who have resided at St. Augustine's Bay and Baly Bay; as well as with the descriptions accurately recorded by the Norwegian Protestant missionaries at Tolear.

From these sources it is evident that the Sàkalàva and all the west tribes are incapable of sustained military combination or civil organization. They have remained unimproved for the last two centuries, if, indeed, they are not more degraded from their ancient simplicity by the introduction of gunpowder and muskets, rum and arrak, and the means of purchasing these commodities by the betrayal into slavery of their comrades and relations. Nevertheless the successful operations of men like La Case show that under good leadership and organization their tribesmen are not incapable of doing good service at least against their own equals, and doubtless if properly disciplined could be drilled and made as efficient as the Madras Sepoys. Unfortunately whatever was undertaken by the French during the seventeenth century was carried out on too small a scale and by the wrong class of men. Their leaders were not supported from home, and the knowledge of overcoming the local malarious fever was wanting. Coercion instead of conciliation was the policy of all European expeditions in those days, and the result was an undying hatred of the foreigner by the inhabitants, by nature more timid and docile than ferocious and untameable.

The West Coast Tribes.—The various Sàkalàva tribes are perfectly independent and jealous of one another, seldom remaining long on a friendly footing with their neighbours. They are frequently at war, and many are the *causæ belli*, such as cattle-lifting, robbery, quarrels about hereditary fiefs, insulting personal remarks between the chiefs, disagreements with regard to boundaries and pretensions to supremacy, &c. But although the tribes make war against each other so often their battles are not very serious, nor the casualties numerous. If any are killed it is immediately known on both sides, and all become sorrow-stricken. The weeping women stand up to negotiate peace, and the war ceases until a new quarrel again offers an opportunity for recommencing hostilities, and they have not very long to wait. Although they are so violent in war, the number of killed, under the circumstances, is very small. They fight in very extended order, and every warrior is particularly careful to remain under cover, so they blaze away, expending plenty of ammunition with the *minimum* of effect. When danger is near they take good care to escape in time, and the sight of a comrade shot or captured will cause a

general panic. Every one fights on his own hook, and has not the slightest confidence in his own side assisting him. Should a man fall, he is left to his fate, and no Sàkalàva would dream of an attempt to rescue or defend his comrade. One chief reason for this lack of courage and confidence is that they are often compelled to fight against their own relations should they be among the enemies of their king. When war is proclaimed all the people are obliged to follow their king whether they like it or not; and if any one dared to make an excuse on the ground of not wishing to fight against friends and relations, he would expose himself to cruel treatment. If a warrior thinks it more advantageous to him to join with the chief's enemies, he will frequently become a deserter. The Vezo (coast tribes near St. Augustine's Bay) are especially given to this sort of desertion.

The most secure retreat for deserters is the Fiherenga kingdom, which is the largest and most powerful of all the independent kingdoms, and offers the most secure protection for runaways.

The many petty princes in this kingdom, sons or relations of the present King Lahimorisa, gather together as many men as possible for their own individual ends (for they are always fighting with each other), and in consequence, that old weak chief has no power to carry out his laws. All deserters from other kingdoms are accepted and welcomed in this Alsatia by these petty chiefs, who like to have a large number of followers ready to fight, rob, or plunder, and do every kind of evil deed. On this account the Fiherenga province is the most insecure as to life and property throughout Madagascar.

The Sàkalàva consider it possible to keep on good terms with all except the Hova (or Ambaniandro), against whom they have sworn an eternal enmity. Even when fighting with other tribes they do not regard them as their enemies. The only tribe they regard with real hatred is the Hova, as they believe that the Hova is the only tribe which intends to subdue the Sàkalàva and seize their country. Rather than become subject to the Hova, and give up their independence, they would exterminate themselves by warring against each other.[1]

Sàkalàva Warfare.—The *Ampisikely*, or soothsayers, prophesy when war may be expected to be declared by any neighbouring king. The *Ampisikely*, on being asked whether there shall be war or not, takes his divining apparatus, generally a small board divided into squares, on which some small stones are placed—the wisdom stones. His divinations are oracular; then he says, perhaps, the enemy may begin to make war upon the kingdom in the beginning of the next month; if not then it may be about the time of the next new moon; and so on, till even half-a-year has passed away, but the enemy makes no appearance at all.

When war, however, is actually declared, whether a war of aggression or defence, the chieftain appeals to his followers, and the men gather at the appointed *rendezvous*, generally the king's residence.

[1] A. Walen, Norwegian Mission, "Antananarivo Annual," 1881.

When assembled the first thing thought of is to secure a proper charm or talisman. The sorcerer, *Onsitra*, obtains a black bull calf and a cock. These animals are buried alive, and when covered with earth a mark is put on the spot. When the advancing enemy sees the potent sign he is supposed to retire and war is averted. But sometimes the enemy will make a flank march to avoid the hidden danger; and again the *Onsitra* is summoned to provide medicine to instil valour into the tribesmen. This is generally provided in the shape of an ox-horn full of grease, with which the warriors anoint their bodies, thereby rendering them presumably invulnerable. The warriors then start shouting and singing their war song, until the hostile forces are near enough to shout defiance at one another, when a halt is called. After an interchange of compliments, the firing begins, and should any one fall his fellows take to flight. The enemy run up to the fallen man, spear him, and plunder him, and the battle is over for the day. The Sàkalàva only approach each other near enough to use their spears when very excited, and this game is repeated for weeks and even months. The vanquished receive no mercy from the victors, who carry away the women and children, cattle, and any other property they can lay hold of. Wars of this kind are constant, and are much enjoyed by the Sàkalàva, for there is little real bloodshed.

The Sàkalàva tribes are now in much the same condition as they were in the days of Flacourt. From their frequent intercourse with Europeans in the Mozambique they obtained a knowledge of the use of firearms, and cheap muskets, gunpowder, and rum have always been the chief articles of commerce on the west coast. The possession of firearms enabled them to exercise military supremacy throughout the western and warmer portions of the island from north to south, and the highland tribes of the interior were subjected to blackmail. The province of Imano, indeed, paid tribute to the Sàkalàva of Menabé until the Hovas, obtaining arms and ammunition, were able to turn the tables on their more swarthy neighbours.

1774. After the abandonment of Fort Dauphin and the destruction of the garrison, the intercourse between Madagascar and Europeans was for a long time most casual, and the southern provinces of the island were left to themselves. But at about this period the pirates who infested the Indian Ocean made settlements at St. Mary and Antongil Bay, from whence they sent out marauding expeditions, until 1722, when the piratical haunts were destroyed by the Portuguese. French adventurers, of similar calibre to La Case, successfully established themselves in the neighbourhood of Antongil Bay, notably one Bigorne, who was recognized as Commissioner of Trade by the Government of Mauritius until the arrival of Benyowsky. Benyowsky was a Polish adventurer who escaped from Siberia, and was entrusted by the French Government with the establishment of a military colony at the head of Antongil Bay, where he arrived in 1744. The natives were at first ready to be friendly, as they had been with Bigorne, but Benyowsky, whose followers were as unprincipled as himself, soon involved the whole

country in war; and instead of instituting a self-supporting establishment, capable of exporting provisions to Mauritius and Réunion, his expedition required provisions from without, and consumed the depôt of supplies intended for the French island colonies, which are entirely dependent on Madagascar for sustenance."

Benyowsky, with 300 Europeans and 3,500 native allies, made an expedition against the northern Sàkalàva. As he advanced he was joined by numerous tribes, so that when he approached the Sàkalàva camp his forces amounted to 16,313—a swarm of locusts attracted by the prospects of plunder. An engagement took place, in which eighty Sàkalàva were killed and fifty wounded, after which the enemy sued for peace. His conduct not being approved by the French, he resigned his command and went to Europe, where he in vain sought employment in Madagascar by the French, English, and other European Governments. At length, obtaining money and goods in America, he returned, and attempted to found an independent government of his own, and, having appropriated the stores of the French Government, a frigate was despatched from the Isle of France, from which a detachment was landed at Angoncy, under Captain Larcher, to capture him. The Pole offered resistance, and was killed by the first volley from the French marines, who took possession of the fortified post the adventurer had occupied.

1810. *Origin and Development of the Hova Military Supremacy.*—Hitherto the coast tribes only had been known to Europeans, and from the above notice of the Sàkalàva, who represent them, it is evident that they have been ever looked upon by civilized nations as incapable of forming a strong government of their own.

Whilst Bigorne and Benyowsky were causing internal dissensions and fruitless attempts at civilization on the coast, in the interior highlands of Madagascar a tribe of superior intelligence was beginning to comprehend and make use of combination as a means of advancement and power. The origin and previous history of the Hovas is too obscure and remote to enter upon here. It is sufficient to say, that when Mr. Farquhar came to Mauritius, he found amongst the records accounts of the growing supremacy of the Hovas in the elevated plateaux of Imerina.

Andrianimpoinimerina had successfully combined the scattered clans of a certain district, sometimes called Ankova, and established a small kingdom, which he was gradually enlarging by the successful annexation of the adjoining provinces. Having established communication with the Arab slave-traders of the north-west coast at Mojangà, along the line of the Ikiopa River, the Hova chief had obtained muskets and ammunition. His people also possessed a plentiful supply of natural iron, and the knowledge of smelting and manufacturing tools and weapons. They were large raisers of cattle, possessed extensive rice-fields and pasturages, and were perfectly independent of exterior assistance. They were hardy, intelligent, and brave, and although small, agile and wiry. Each village was a fortification, and when Mr. Farquhar first discovered their capacity and aptitude for improvement, the founder of the combined nation had lately died and been

succeeded by a young ambitious monarch, with a French deserter from Réunion as a companion, who had imbued him with Napoleonic ideas. Radama, born in 1792, was only eighteen years of age when he became king, in 1810, just after his father had consolidated his kingdom and subjugated the Vakinankaratra, the most formidable tribe of spearmen and warriors throughout the island.

1820. *The Campaigns of Radama I.*—Radama I followed in the footsteps of his father, and devoted his attention to the subjugation of the entire island of Madagascar. Of his early campaigns we have no record, but in 1816 Captain La Sage, aide-de-camp to Governor Farquhar of Mauritius, took up some British soldiers to Antananarivo, and left Sergeant Brady and another non-commissioned officer to drill Radama's troops in European fashion. By the treaty made in 1817, England agreed to pay Radama a yearly subsidy, including 100 English Tower muskets with accoutrements, 100 barrels of powder, 10,000 flints, 400 suits of uniform, &c.; so that by 1820 he felt himself powerful enough to commence a war on the Sàkalàva of Menabé, to whose chieftain the Hova district of Imamo had long been tributary.

A considerable force was therefore sent to the west under M. Robin, a French deserter; but the Sàkalàva succeeded in repelling the invasion of their territory, and the French leader and the Hova troops returned to Antananarivo in disgrace. Meantime Sergeant Brady continued his unwearied exertions with the troops, and by dint of hard drill and severe discipline at last organized a body of picked soldiers, which formed the nucleus of a larger army, the British words of command being used.

1821–22. *Subjugation of the Sàkalàva.*—In the autumn of 1821 Radama was so far encouraged by the improved discipline of his troops, as to turn his thoughts to the further prosecution of the war with the Sàkalàva. For this purpose a *kabary* was held at Andohalo, when from 40,000 to 50,000 persons were present. It was then resolved to renew hostilities, and that every man capable of bearing arms should go to war, or pay a forfeit of 10 dollars. Preparations for war were accordingly made during the rainy season, and early in the ensuing spring the people were ready to commence the expedition. Including a thousand disciplined troops, with slaves, bearers, and attendants, the whole aggregate amounted to 70,000 or 80,000 men.

On the 23rd June, 1822, about 500 *Maroserana*, heads of districts, assembled in the court-yard of the palace, bearing their shields and spears, assuring their monarch of their fidelity in the approaching war, and betting wagers from 5 dollars to 1,000—the coward to pay the brave. The king stood at the door of his palace, holding his spear and shield, exciting the ardour of his people by his actions and addresses, prompting them to bet high, promising to confer his greatest honours on the brave and to reward them with 9 dollars for every head of the enemy; at the same time representing the Sàkalàva country as abounding in cattle, where abundance of booty might be obtained.

At daybreak on the 24th June, cannon were fired as the signal of

departure. The king, acting as priest as well as Commander-in-Chief, sacrificed a cock and a heifer, and offered a prayer at the tomb of Andriambelomasina, his renowned grandfather. Mounted on a *filanzan*, carried on men's shoulders and accompanied by Mr. Hastie, the British Agent, surrounded by his body guard, the king then took his departure from the capital. The national idols were taken with the headquarters of the army, whilst each clan or tribal division took its own idol, and every soldier possessed a private charm or *ody*. The astrologers, *mpanandro*,[1] and diviners, also formed a species of intelligence department, directing the days of marching, the direction, the watering places and sites for encampments, indicating the fords, strategy, and tactics of the campaign. The birds crossing the path or flying over the heads of the troops were also carefully observed, as auguring well or ill to the expedition.

Of this vast multitude, the men kept their own respective clans, and each territorial regiment had its own leader, each individual soldier furnishing himself with his own weapons, whether gun or spear and shield. Imerina was almost deserted by the departure of the troops; few able-bodied men being left, but only the women and children, the aged and infirm. Raholatra, brother to Ramitraha, chief of the Sàkalàva, acted as guide: having quarrelled with his brother he thus turned traitor. But Radama placed no trust whatever in him, and had him watched closely by 100 men.

The army advanced in short stages to the west and various routes assigned to the different divisions, which were ordered to assemble at a given rendezvous on a certain date. On the 8th July, the day when the army was expected to cross the Sàkalàva frontier and encounter the enemy, all the females at the capital arose at daylight and assembled in bands facing the west, sang war songs, and brandished sticks like spears in the direction of the enemy. This expedition lasted until October. Its principal object was ostensibly to search for Ramitraha and his followers, in reality to seize whatever booty could be secured. In these pursuits the conduct of the Hovas is said to have resembled rather the ravening of wolves than the deliberate attack of warriors. If they could seize cattle or surprise a few defenceless people, they rushed upon them with fury; but in any moment of danger no one cared for his neighbour, only caring for himself.

Fever and want of provisions proved dreadfully destructive to the troops in this expedition. It was calculated that not fewer than 25,000 or 30,000 perished in the campaign, and most of these from hunger. The stock of provisions carried from Imerina was consumed, and no supplies could be obtained. Even Radama himself and the British Agent had a mere handful of rice and a few birds,

[1] "— quod apud Germanos ea consuetudo esset, ut matres familiæ eorum sortibus et vaticinationibus declararent, utrum prœlium committi ex usu esset, nec ne: eas ita dicere, 'Non esse fas Germanos superare si anti novam lunam prœlio contendissent.' "—(*Cæsar*, "*De Bello Gallico*," *Lib. I, Cap. L.*)

"Coëunt . . . cum aut incohatur luna, aut impletur; nam agendis rebus hoc auspicatissimum initium credunt."—(*Tacitus*, *Germ.* 11.)

which the latter shot, during the space of eight days. The people died on the road, unable to sustain the complicated evils of malaria and want of regular supplies. For months afterwards not a day passed without the firing of musketry in some part of the capital, indicating the arrival of the corpses of those fallen in the war. The bones only were thus brought, the flesh being scraped off on the spot where the deceased fell. The Sàkalàva were hunted through the woods, and took refuge in caves and inaccessible retreats.

Rasalima, the daughter of the Sàkalàva Chief Ramitraha, who subsequently married Radama, remarked to some Officers who had accompanied the latter in his expedition, "We saw you, during your whole march, and observed all your movements in search of us. We were near you in the woods, and concealing ourselves in caverns; and on one occasion you actually walked over our heads, without ever imagining we were so near." Yet there were several thousand men with Radama and as many with Ramitraha.

The Hova took vast numbers of slaves and cattle, and captured Mananarivo, the capital of Ramitraha, only some 15 miles from the Mozambique Channel, where the household gods of the Sàkalàva Chief were taken possession of, as well as two pieces of ordnance, which were buried in the bed of the River Mania, and afterwards brought up to Antananarivo by Ramanetaka. But the Sàkalàva remained unconquered.

The king made a halt on his return a few miles west of Antananarivo, where he and his followers, after performing a religious ablution, made a triumphant entry, proceeding in pomp to the holy stone at Andohalo. A general *kabary* was held, at which honours were conferred on the Officers who had distinguished themselves during the campaign.

1823. *A Regular Army constituted.*—The losses sustained by the Hova army during the campaign against the Sàkalàva were keenly felt by the inhabitants of Ankova, who showed a decided disinclination to again proceed on such another expedition. In consequence, at a great *kabary*, Radama announced that he wished no more to take the people in a body to the war, that the last expedition had been a lesson on that subject, and that henceforth soldiers only should go out to subdue the enemy, to quell disturbances, to subject the island to his government, to protect the innocent, and to secure peace and tranquillity to the kingdom. "And for these reasons," said the king, "it is necessary that the regular army should be augmented. As to the numbers requisite, and the quota of men each district should furnish, that I leave you to deliberate upon; at the same time, those who are not selected for soldiers, but who remain at home, must pay a tax towards the support of those who go to war." This address was cordially received, and on the king requesting those who wished to volunteer for service to stand up, a great number instantly arose.

The Officers of the Voromahery Regiment (the one disciplined body of the capital) ascertained the number of volunteers to be 13,000, and these were at once placed in training and reviewed at Ambohimanga in March 1823. This small army was harangued by Radama, who

left it to them to consider and determine what punishment should be inflicted on cowards and deserters. The troops unanimously fixed upon burning as the military punishment for desertion and cowardice; this punishment, however, it was expressly agreed should not affect the family or property of the criminal.

It was not then imagined to what extent the power, which was created by a disciplined and organized standing army, would desolate the country and destroy the inhabitants of the other provinces of the island.

Establishment of the Hova Power on the East Coast.—One of the first uses Radama made of his possession of a regular army was to establish a post on the east coast and connect it by a line of communication with the capital. The eligible situation fixed upon was Foule Point, with communication through the Antsihanaka country.

The Second Sàkalàva War.—In 1823 the war with the Sàkalàva chief, Ramitraha, was renewed, and Radama took the field with his 13,000 disciplined troops, accompanied by 7,000 bearers and camp followers, with baggage and provisions. On arriving at the frontier, a mission was sent on in advance, promising good terms to the Sàkalàva, who, however, rejected the message with scorn.

The first stronghold on the borders of Menabé is the rock fortress of Modongy (the Village of the Sulky). The inhabitants defended themselves with much bravery, but the place was stormed, many of the defenders putting an end to their own existence rather than fall into the hands of the Hovas.

Another engagement took place within the Sàkalàva territory, and to show his determination to retain his conquests and to remain in the country, Radama ordered a party of 2,000 men to clear the site of the battle, and build a village and stockade on the spot. Here he established a garrison, and left Rakizoarivo as Governor of the district.

This determined attitude caused Ramitraha to give in his submission, and he therefore proposed that the Hova King should enter into an alliance with him by marrying his daughter Rasalima. This was agreed upon, Ramitraha acknowledged the suzerainty of Radama, and the latter returned with his Sàkalàva bride to the capital, accompanied by the representatives of Ramitraha, who swore allegiance and friendship in public assembly at Antananarivo.

Meantime Rafaralahy, Radama's officer at Foule Point, was threatened by a coalition of the malcontent chiefs of the northern provinces. These chiefs were therefore summoned to swear allegiance, an order with which they were forced to comply, although they were secretly plotting a rebellion against the authority of the Hova supremacy.

This threatening appearance and discontent caused Radama to march his army to the east coast, and he appeared before Tamatave, where his suzerainty was acknowledged by the half-caste chief of the Betsimisaraka, Jean Réné. Then he proceeded to Foule Point, where H.M.S. "Ariadne" was lying, commanded by Captain Moorsom. Captain Moorsom conveyed Radama and about 200 of his men across Antongil Bay, whilst the main body of his troops marched round

through Maroa. Radama established his troops in various posts, and returned through Antsihanaka to establish direct communication with Imerina. The chief of the Antsihanaka, thinking himself secure on his island in the large lake Alaotra, refused to come in and give his submission, whereupon Radama constructed rafts on which he placed his cannon and attacked the island. The first assault was repulsed, and the Officer in command was tried by court-martial and burnt. Another attack was successful, and the island taken, upon which the subjection of the Antsihanaka was accomplished. Simultaneously another Hova Officer, Rataffe, proceeded against the northern Sàkalàva of Iboina, who accepted the terms offered by Radama. The Hovas thus were acknowledged supreme throughout the northern portion of Madagascar.

1824. Radama now felt that he had acquired his sovereignty by his military power, that he must maintain his supremacy by the same means, and that instead of leading into the field a lawless horde of rapacious savages, he now commanded a disciplined force. Governor Farquhar, who visited Foule Point at this period (1823), describes the garrison there as "a well-accoutred, very respectably-disciplined body of soldiers, whose conduct and regularity in all their exercises and evolutions marked at once a considerable degree of sagacity, subordination, and sense of propriety."

In the spring of 1824, Radama, still bent on reducing every chief in the island to a state of vassalage, determined upon undertaking another expedition into the north Sàkalàva country, leaving his capital on the 28th May.

By the 12th June the army was encamped at Anaslavoor, when intelligence was received that Andriansolo, instead of delivering up the flag he had received from Commodore Nourse, was prepared to resist. Mr. Hastie went forward and attempted to make terms, but Hussan Barroched, the Arab Commandant of Mojangà, refused to submit, and was killed by the Hovas, whilst Andriansolo took refuge on an island. Radama's Generals Ramanetaka and Rameno occupied Mojangà and put a stop to the slave trade carried on there by Arabs and Moormen; whilst after some delay Andriansolo came in and submitted to Radama on the 19th July.

The province of Iboina submitted, and Ramanetaka, with a garrison of 1,100 men, was left to garrison Mojangà and to rule over the country from the river Manamboho to Majambo Bay; Rameno to govern the country between the Betsiboka and the Sofia rivers from his post at Trabonjy; Razatova to the north Antankara district at Vohémar; Ramarosikina to govern all Iboina west of the Betsiboka.

Radama and a portion of his army turned south through the forest of Manerinerina between the Bemaráha Hills and the Bongo Lava Mountains, where there are quantities of wild cattle. Here the celebrated leader and sorceress Triemanosinamamy was captured and killed. In October the troops returned to Vonizongo and reached the capital during the following month. "The whole island is now mine," said Radama.

1825. On the 1st January, General Ramananolona left Imerina

with 2,000 troops and took Fort Dauphin, remaining there as Governor of South Madagascar. During the same year some thousands of troops were sent in detachments to garrison various fortified villages and posts throughout the conquered provinces, and to enforce the disarmament of the inhabitants. The Sàkalàva, however, again revolted, cut off and massacred several of the garrisons, whilst Andriansolo refused submission to Ramanetaka, and fled to an island on the coast. It was only by great exertion that Ramanetaka was able to hold Mojangà until General Rainimaka joined him with reinforcements and suppressed the rebellion.

General Rafozehana at the same time led a division of troops through Menabé in fruitless search for Ramitraha, disarming the tribes.

In June, the districts of Maroa and Betsimisaraka revolted, the inhabitants refusing to surrender their firearms. Mr. Hastie suppressed Maroa, and Rafaralahy restored tranquillity among the Betsimisaraka. Andriandina at this time subdued the country of Anonibé east of Antongil Bay, although unable to make the chief, Isasy, prisoner.

1826. Rafozehana was again despatched with troops through Menabé in 1826, searching for Ramitraha, whose daughter, Rasalima, was also sent to treat with her father, accompanied by an escort of 1,000 Hovas under M. Robin. A nephew of Ramitraha, attempting to surprise the escort of his cousin, was killed, and the Sàkalàva chief sent an embassy to Radama, thus preventing further hostilities.

In June Radama proceeded to the coast at Tamatave, whilst General Brady left the capital with an army of 9,000 troops and 5,000 bearers on an expedition into Vangaidrano, south of the Betsileo country. More than nine months were employed in the subjugation of this difficult country, where every village was a natural fortress, and the opposition formidable.

At last Rabedoka the chief was captured by stratagem. He and several of his principal adherents and their followers had taken up a position at Hiàranàny, where they bravely defended themselves. Unable to take the place by storm in open daylight, the Hovas collected a quantity of straw and dry grass, with which they constructed a number of bonfires. Suddenly lighting these bonfires by night, they made their attack on the superstitious savages, who were terrified by the unforeseen fires, and fled down the valley of the Mandranafotsy, where the survivors submitted unconditionally the following morning. Rabedoka and twenty of his chiefs were slain, their bodies being exposed on poles at the entrance of his town.

On the return of the troops several Officers and men, having been convicted of cowardice, were condemned to death and publicly burnt alive.

Ralahifotsy, who was in command of a force checking insubordination in Betanimena and Anteva, was also convicted of defrauding the King of captured spoil, and with his colleague Rafaralahindera suffered death by being shot.

On July 27th, 1828, King Radama died, having firmly established Hova supremacy throughout the island of Madagascar.

1828. *Military Despotism of Queen Ranavàlona I.*—The principal man in all the events that conducted Ranavàlona I to the throne of Madagascar was the young Officer, Andrianmihaja, who had previously distinguished himself in the wars against the Sàkalàva under the late sovereign. He was immediately chosen on his accession as Prime Minister and Commander-in-Chief.

Radama, as already intimated, enlarged his kingdom of Imerina by conquest, until he had obtained more than half the island. To secure these additions, and ultimately carry out the predetermined plans of Radama by subjugating the whole island of Madagascar, was now the principal object of Ranavàlona's government.

For this purpose the attention of the Hovas was chiefly directed to annual predatory excursions and raids, such as had been the customary system of warfare throughout the island from time immemorial; but the Hovas had now appreciated organization and reaped its advantages, so that these annual raids had become a systematic method of obtaining revenue for the Hova sovereign. In fact they were military expeditions ostensibly for enforcing the sovereignty of the Hovas over the less civilized tribes, and disarming the rebellious populations; but in reality the commanders of the Queen's forces gained credit by returning with as much spoil, in the shape of slaves and oxen, as they could capture to the capital; enriching their sovereign and themselves indeed, but devastating and depopulating the richest districts in the island, and impoverishing as well the province of Imerina itself by draining it of its youth for the great standing army amounting to no less than from 20,000 to 30,000 men. As large numbers perished annually from disease and exposure during these campaigns, new levies had constantly to be made until the flower of the Hova people disappeared.

These warlike excursions for the purpose of subduing the provinces that had not submitted to the Hova rule were attended with melancholy results and cruelties abhorrent to humanity. A division of the army, amounting to perhaps some 2,500 or even 10,000 men, as the circumstances of the case seemed to require, was despatched about the close of the rainy season, in June, to the selected locality with orders to return home before the commencement of the rainy season in October or November. This army was attended by a large following of non-combatants ready to share in the opportunities for plunder. No regular commissariat or system of supply existed, and the troops and camp followers lived upon the country through which they marched like a flight of locusts.

The first military operations, however, in which the troops of Ranavàlona had to participate were of a defensive character, as the French Government had determined to enforce its rights at the hands of the newly constituted Malagasy Cabinet.

Gourbeyre's Expedition, 1829–30.—Early in 1829 the Government of Charles X decided that a squadron should make a demonstration off the coast of Madagascar to ascertain the feeling of the new Queen of Madagascar and to uphold French interests.

The then Minister of Marine, M. Hyde de Neuville, accordingly

notified this decision to the Count de Cheffontaines, Governor of Réunion, impressing on him the necessity of only occupying such points on the coast as could be safely held by the troops available.

In accordance with the Minister's instructions the following vessels were collected at Réunion and St. Marie in June, whence they assembled at their appointed rendezvous in the roadstead of Tamatave on the 9th July, 1829, viz.:—"La Nièvre," "La Chevrette," "L'Infatigable," "La Terpsichore." These were joined by the transport "Madagascar," carrying expeditionary land forces as follows:—85 artillery, 21 military labourers, and 33 infantry (including *Yolofs*, black troops from Senegal). Capitaine de Vaisseau Gourbeyre arrived in the despatch vessel "Colibri," and hoisted his broad pendant on board the frigate "Terpsichore."

The French Commodore landed with presents for the Queen, in order to ascertain the dispositions of the Hova Government, and observed that preparations for the defence of Tamatave were being made, the garrison of the fort being increased, and ammunition arriving from the interior.

M. Gourbeyre therefore at once despatched an *ultimatum* to Queen Ranavàlona notifying the French complaints, and demanding an answer within twenty days. Meantime the squadron proceeded north to Tintingue of which possession was taken on the 2nd August, and here earthworks were at once thrown up, armed with eight guns, and garrisoned. The small fort was occupied, and the French colours hoisted on the 19th September, without resistance.

About this period the French deserter Robin, who had served with Radama, came to M. Gourbeyre to offer his services in raising the Sàkalàva tribes of the north-west coast, under the exiled chief Ramanetaka from Anjouan: but M. Gourbeyre would not entertain the project.

Leaving the "Infatigable" corvette at Tintingue with 300 men in garrison, the Commodore took the rest of his force to Tamatave, where he moved his ships within easy range (300 toises) of the Hova battery, Taomasina, by the 10th October. Having sent on shore to the Hova Chief, Coroller, to know if the Queen had sent down the necessary authority for him to treat with the French, on a reply to the negative effect being received, the French Commander sent a formal declaration of war and intimated that he would commence hostilities immediately. The first few shells fired were sufficient to explode the powder magazine of the fort, upon which the Hova garrison abandoned the works, and 238 men under Captain Fénix landed and took possession of the place, finding 23 carronades and 200 muskets left behind with 50 bodies of Hova soldiers slain by the effects of the French fire and the explosion.

M. Gourbeyre did not occupy Tamatave, but proceeded to Foule Point, where the squadron anchored on the 26th October.

On the 27th the ships opened fire on and silenced some batteries on the coast, and landing parties were put on shore to spike the guns and take possession of the village, in rear of which the Hovas had constructed a retrenchment.

Disaster at Foule Point.—The French (writes M. Barbié du Bocage),[1] having seen the Hovas evacuate their batteries, extended themselves without orders on the beach, discharging their muskets at the fugitives and pursuing them with the bayonet. Thus they traversed the streets of Foule Point; but on reaching the furthest huts they found themselves in front of a new redoubt whose existence they had not suspected. At first sight they attempted to form a column of attack whilst the Yolofs should make a détour round the enemy's flank under Captain Schœll, but by some fatality whilst rallying, the Hovas discovered them and discharged grape and canister from seven or eight guns in the redoubt, which fire caused disorder and loss in the ranks not yet re-formed. A panic ensued and the soldiers fled to the shore. The Hovas seized this opportunity to make a sortie and would have infallibly cut off the retreat of the French troops, had not Ensign Charuau, who commanded the frigate's cutter, fired case into them with the boat's gun. Unfortunately Captain Schœll was killed, together with five or six French sailors. In this disastrous affair the Hovas were said to have lost 75 killed and 50 wounded: whilst the French loss was 11 killed and 26 wounded: but this difference, says M. de Bocage, did not diminish the moral effect of the rout, and the Hovas naturally exaggerated their victory.

Commodore Gourbeyre did not attempt to make reprisals or repair the repulse of his force on shore, but withdrew to Tintingue, which fort was threatened by the enemy. Thence he proceeded against a post which the Hovas had established at Pointe à Larrée, which he attacked on the 4th of November. Here, reinforced by 50 artillerymen and 20 Yolofs from Tintingue, the French squadron bombarded the fort for two hours, after which a storming party in two columns was landed and led to the attack by Captain d'Espagne. The right column advanced and penetrated the fort by one entrance, under Lieutenant Baudson of the artillery, who fell covered with wounds. The left column under Lieutenant Somsois, Marine Artillery, and M. Dambané, succeeded in forcing their entrance at another gate, and the fort was taken. The Hovas left 119 dead on the ground, 27 prisoners, 8 guns, 700 pounds of powder, and 250 oxen. The French loss was one dead, and nine wounded.

The season was now at an end, and the French squadron was withdrawn, leaving a garrison of 400 men under Captain Gailly, at Tintingue, and 150 men under M. Carayon at Ste. Marie, the intention of the Government being to prosecute the campaign with vigour during the next good season. The Revolution of July at Paris overturned the French Government and the policy of M. Hyde de Neuville.

General Sébastiani and Vicomte d'Argout, the new Minister of Marine, shelved the Madagascar question, and in May, 1831, the evacuation of Tintingue was effected in the face of a force of 3,000

[1] "Madagascar, Possession Française depuis 1642:" par V. A. Barbié du Bocage, 1858.

Hovas, who at once took possession of the place. Ste. Marie was still held by the French, and has since remained a French colony. The French did not again hold any port on the mainland of Madagascar for over half a century.

During all these operations in 1829, it may be remembered that the coast tribes held aloof from the French and could not be persuaded to rise against the Hovas, their masters. They are still the same that they were in the days of Flacourt, of La Case, of Benyowski, and Hastie, mistrustful of Europeans, and advisedly so.

1831. *Expedition of Rainiharo and Ramboasalama.*—Among some of the earliest expeditions sent out during the Queen's reign were those under the command of Rainiharo and Ramboasalama to the south in 1831. These chiefs on their march southwards came to a town in the Betsileo country, and determined to sacrifice it for the sake of plunder.

There were about 300 families residing there, living in quiet and peaceable submission to the Hovas, regarding them as friends, and never dreaming of attempt to escape on the approach of the army.

The Officers of the Queen's troops then invited all the men from the village to a friendly repast with them in their camp, and the invitation was accepted. The soldiers had private orders given them to be provided with lashings, and that as soon as they heard the drum beat they should seize and bind their guests. At the appointed hour the unsuspecting villagers arrived, entered the camp, and sat down quietly waiting for their cooked rice; when the drums were beaten, and at the signal the soldiers seized their visitors, bound their hands, and leading them outside the lines, deliberately speared them in cold blood. The second Officer in command on this occasion, Ramafadrahona, boasted that he had killed eleven of them with his own hands.

One of the villagers who happened to remain at home, hearing what was taking place, effected his escape to Ikongo, a natural hill fortress, about 60 or 70 miles from the scene of treachery. Here several Betsileo and Tanala chieftains collected, and many thousands of their people. As soon as they heard the fate of the man's companions, they determined to accept no terms from the deceitful Hova, but to defend their mountain home to the last.

The Hova army arrived outside Ikongo in three days. One division of it was told off for the attack under Ramafadrahona, with instructions to retreat for the day at four o'clock if the place were not taken by that time. The single path that leads up the mountain is exceedingly narrow, and leads over a tremendous precipice. Close to the entrance to the village is a piece of level ground, which the Hova soldiers at last reached with their guns and opened fire on the defenders, who could only reply with stones. Meantime a large number of non-combatant followers had got in advance of the troops ready to rush in and seize the plunder as soon as the troops advanced. But when four o'clock arrived, the order was given to withdraw the guns and descend, upon which the camp followers, dreading their being left unprotected against a sortie of the Ikongo, made a rush to gain

the narrow pathway, and a panic took place; the Officers, soldiers, and mob of camp followers and bearers pressed one another indiscriminately pell-mell over the precipice, where it is said that not less than 2,000 Hova perished. Among them were Ramafadrahona himself and his second in command, Rafalimanana. When the Ikongo tribesmen at length ventured out, they were astonished at the numbers that had perished, and the quantities of muskets and spears, besides the two guns, which they took possession of. This attempt to take Ikongo failed; the Commander of the Hova forces returned to Imerina for reinforcements, but it does not appear that Ikongo was ever captured, and it yet remains in possession of the Tanala tribesmen.

Another Hova expedition, under Ravalontsalama, proceeded into the Sàkalàva country to the west, the same year, and although more successful as to booty, the methods employed were not less cruel and unprincipled than those just mentioned. The chiefs of a district in Menabé were accused of concealing firearms. This was a mere pretence. An appeal was made to the ordeal of the *Tangena* poison, and of course it convicted the parties whom it was intended should be convicted. All the principal men that could be found were seized and thrown bound into a deep excavation dug for the purpose, and after being kept there about two days without any kind of provision, were taken out one by one, and actually crucified at short intervals from one another, forming a long line of excruciating agony round the chief village of the district. It is recorded that many of the wives and female relations of the victims refused to submit to their hard fate of slavery, cruelty, and insult. "This," said they, "is the land of our fathers, our husbands, and our brothers, whom you have murdered in our sight, and shall we now accompany you far away to Imerina to live and die as slaves there?" The spear soon silenced their complaints, and they perished, as they desired, on the spot. Some thousands of the Sàkalàva were, however, seized as booty and conveyed to Imerina by the Hova troops.

1832. *Barbarous Cruelty at Ivato.*—A most revolting instance of barbarous cruelty occurred again in 1832, when Rainiharo and Ramboasalama headed an expedition of 10,000 men, with as many camp followers, to the south. When they reached Ivato, a village in the Manandriana division of the Betsileo country (lat. 20° 32′ S., long. 47° 20′ E.), they found the people posted on a hill, prepared to fight in defence of their homes. The village is almost inaccessible, and within it were ten or twelve powerful chiefs with their clans. The wily Generals, finding it would be almost impossible to take the village by force, employed stratagem, and endeavoured to persuade the people to submit, promising in the strongest terms that if they would quietly deliver up their arms no one should injure them. This negotiation was carried on for three days. At length a division of opinion arose among the Betsileo chiefs, some of whom were disposed to place confidence in the Hova promises, others strongly resisting a measure so full of danger. One end of the village was connected with a large forest, and the latter

party made good their escape through it during the night. About 20,000 persons, however, remained, and these deluded wretches, after again being assured of the most friendly dispositions towards them, delivered up their arms, spears, and muskets.

They were then surrounded by soldiers, and all the men found able to carry a spear were ordered to pass from one circle of soldiers to another, while the women and children remained within the first circle. They were each carefully examined as they passed between the soldiers to see whether they had any concealed weapons upon them. The soldiers then commenced tying their hands behind them, when their fate was evident. Those not yet bound made a desperate rush through the ranks, and some few who tried to escape were caught outside and killed at once. Those that were bound were killed at leisure the following day, the massacre commencing early in the morning and lasting until late in the afternoon.

The expedition then returned to the capital, flushed with their success at the shambles, bringing 13,000 captives. Multitudes of them, filled with grief and horror at the fate of their husbands and fathers, refused to eat on the road, and suffered for it by being beaten. Those who remained inflexible were speared with those who from illness were unable to keep up with the troops. Grief, fatigue, and famine destroyed many long before the capital was reached, where the survivors were sold to the highest bidder.

In 1833, Ratsimanisa conducted an expedition to the south, killed many people, and returned home with 2,000 captives. He administered the ordeal of *Tangena* to four chieftains, pretending to ascertain thereby their intention of rebelling against Ranavàlona. Three out of the four were convicted, and of course put to death with all the able-bodied men in their respective districts, the women and children as usual being made captives and sold into slavery.

Several other expeditions were sent to different parts of the island this same year, and their operations were of the same outrageous character.

In 1834, troops were again despatched to the south, when they destroyed an immense number of the people, and returned home to Antananarivo with about 10,000 captives.

In 1835, a large expedition was despatched to the south-west, to the vicinity of St. Augustine's Bay, under the command of Rainiharo, Andrianisa and Ratiaray being the Officers under him.

There were about 10,000 or 11,000 men in this affair, accompanied by an unusually large number of non-combatants, making a total of not less than 30,000 or 40,000. After advancing beyond Fianàrantsoa, the capital of the Betsileo, a large part of the troops and people being without provisions, were permitted to requisition the property of the peaceable inhabitants, who were the acknowledged subjects of Ranavàlona, so that multitudes were left without any support for the remainder of the year and perished of famine.

The main body of this army proceeded to Mahafaly, thence to Taboara, and across the River Onilahy. Here the army separated; Rainimarolahy and Rakodia took 2,000 men to the west, and Andria-

maro and Rasoarivo with other 2,000 to the east, Ramazava with 1,000 men to the north, and Ramandranto with a similar number to the south. On the return of these divisions from their reconnaissance, a large camp was formed on the north bank of the Onilahy River, whilst 6,000 troops were sent south to Andriampierenana and Andriamahaka, under Razakandrianaina, Ratsitohaina, and Ravelo (all 11 honours). Raningory (11 honours) proceeded with a party down the Onilahy to the port of Isalary. Here they found a fleet of twenty-one American whalers, at sight of which the Hovas were greatly dismayed, and the whole expedition retired to Imerina, expecting an invasion of foreigners.

In 1836, Ratsimanisa was despatched with 6,000 troops to the south, Rainingitabe with 2,000 to the north, and Ravalontsalama with 3,000 to the west. All these returned home in September or October. Ratsimanisa had destroyed upwards of 4,000 men in one day, and carried home with him upwards of 9,000 captives.

On the arrival of Ratsimanisa in the Betsileo country, messengers were sent out by him in every direction to invite the people to assemble, and to assure them that he was only sent by Ranavàlona to administer to them the oath of allegiance and to take their arms, which they must deliver up to the Queen.

Having thus collected all the inhabitants that he could, he divided them into three parties, the first consisting of adults capable of bearing arms, the second of youths about 4 feet high, and in the third he placed all the women and children.

The first party of men were then all bound, a ceremony insisted on and too tamely submitted to, as a form in which they were to take the oath of allegiance. They were then ordered to accompany the soldiers to a large swamp, where the oath was to be administered by striking the water. On arriving at this spot the drums beat a signal, and every one of the adult natives was put to death by the spear. An examination was then made of the youths, and all who were found to be even half an inch above the given arbitrary standard of stature, which the Officers carried with them by the Queen's instructions, were placed by themselves, and soon shared the fate of their fathers. The cries of the women and children had no effect upon the ruthless conquerors. On his return home Ranavàlona highly praised Ratsimanisa for his consummate skill and success, observing that she had no Officer to be compared with him in capturing slaves and booty.

Rainingitabe returned from his raid to the north with about 1,000 captives, after putting to death upwards of 400 men. He had encountered a pretty smart struggle with the Boeni Sàkalàva, and many had fallen on both sides.

Ravalontsalama, having killed about 400 of the enemy in Menabé, returned home with 700 captive Sàkalàva women and children.

These details are sufficient to illustrate the military character of the government of Queen Ranavàlona which thus desolated the whole island, and proved as ruinous to the Hova themselves as to the provinces they subjugated by the method of merciless extermination of all the adult males.

1837. *Close Investment and Capture of Itsàranóro.*—Itsàranóro is now but a small village in a valley on the borders of the Betsileo and Bara countries south of Tsi-afa-batála (*not to be climbed by grasshoppers*), on a rounded boulder-topped hill covered by a small wood. Although now but a few huts remain, in the days of Ranavàlona I the place could boast of a large population. During the reign of that Queen in 1837 Ramiándrivólo (15 honours) brought Hova troops against the place, and not being able to take it by assault, regularly invested it until the occupants should be forced to surrender.

The inhabitants preferred to die of starvation rather than submit to the mercies of the Hova soldiers, and carried out their determination with Spartan stoicism. When at length the Hova troops entered the town of Itsàranóro every human being and animal was dead. Even now the rocks are full of human bones.

The country was now closed to all communication with the outer world, but we know that the annual raids against the weaker tribes continued. It was, in fact, the normal mode of collecting revenue. The only European who was resident at the capital was one M. Laborde, formerly an artificer in the French Army, who greatly enriched himself in property and slaves by manufacturing arms for the Hova troops.

A record of the building of the great palace at Antananarivo, however, furnishes us with the numbers of the troops employed as military labourers in 1839. These are the numbers of the troops that were brought for the work :—

			Men.
Imerina.	From Avaradrano ..	Northern Division ..	8,000
	„ Isisaony ..	Southern „ ..	6,000
	„ Imarovatana ..	West „ ..	2,500
	„ Ambodirano ..	South-west „ ..	2,500
	„ Vonizongo ..	North-west „ ..	7,000
	„ Vakinankaratra ..	Extreme South Division	8,000
			34,000

It was stated in 1840 that the province of Ankova (Imerina) had been drained of its youth to maintain the standing army of 30,000 to 40,000 men; that in their expeditions which were attended by a more than equal number of camp followers, scarcely more than half the number returned. But this admitted of no comparison with the numbers that perished by the treachery and carnage of these troops. It is stated that at the above time 100,000 human beings had been killed in Queen Ranavàlona's wars, and double that number, including women and children, sold into slavery, or divided as booty among the Officers. The Queen's Government now thought that their forces would be as efficient against foreigners as they had proved against their own neighbours, and the army, which included the large proportion of the manhood of Ankova, was increased.[1]

1845. *Disastrous Attack on Tamatave by the Allied Squadron.*—

[1] George A. Shaw, "Antananarivo Annual," 1876, p. 104.

In consequence of complaints made by British subjects to the Government of Mauritius in 1844, Her Majesty's ship "Conway," 26 guns, commanded by Captain Kelly, was despatched to Tamatave, with instructions to call upon the authorities there for an explanation of the circumstances which had led to the infliction of imprisonment and fine on Englishmen. No satisfactory result ensued, and the "Conway" returned to Mauritius for further orders, when suddenly a peremptory order from Queen Ranavàlona arrived, ordering Razakafidy, the Governor of Tamatave, to expel all the European traders from the island.

Lieutenant-General Sir William Gomm, Governor of the Mauritius, and Admiral Baroche, Governor of Réunion, on hearing of this hostile move by the Hova Government, at once took steps to protect the European merchants on the coast of Madagascar. Accordingly the "Conway" anchored in the roadstead off Tamatave on the 12th June, where the "Zélée," 12 guns, commanded by Captain Fiéreck, had already arrived, and on the same day, the French Commodore, Romain Desfossés, made his appearance in the "Berceau" frigate, of 26 guns.

During the 13th and 14th the Europeans were embarked on board the merchant ships in the roads, under protection of the guns of the men-of-war, but their houses were plundered by the Malagasy, an outrage which the English and French Commanders, who were in complete accord, resolved to punish.

On the morning of Sunday, 15th June, therefore a joint protest against the proceedings of the Hova authorities was sent on shore, with a notice that fire would be opened from the ships unless a satisfactory answer was received by 2 P.M.

The Hova soldiers retired into their fort, and the inhabitants fled from the town in expectation of the attack.

The allied ships were moored in a line parallel to the shore, opposite the Malagasy works, at a distance of 700 yards from the principal fort.

The fortified works of Tamatave consisted of two elevated batteries with guns *en barbette* and open in rear, connected with and flanking the principal fort, an enclosed work of considerable strength, which had been built under the direction of two Arabs of Zanzibar, subsequent to the expedition under Captain Gourbeyre in 1829, and only lately completed. This fort, which still remains, is of peculiar construction, and consists of a circular citadel, with massive rampart and parapet of coral rock, in which are casemated galleries and embrasures. Round the body of the work is a dry ditch, 32 feet broad, and perpendicular scarp and counterscarp. On the crest of the counterscarp is an outer enceinte, forming another parapet with large ports corresponding to the embrasures of the inner and main work. The exterior slope of this parapet at an angle of 45° is strongly palisaded, and the whole thickly screened by groves of trees and bushy scrub, down to the beach.

The garrison at the time was estimated at 400 regular Hova troops, with 600 Bestsimisaraka and Betanimena auxiliaries.

At noon Captain Desfossés (whose official report is followed) harangued his crew, and informed them and the French refugees that the Hovas were to be punished that day; whereupon the refugees requested permission to be armed, and were furnished with muskets and cutlasses, &c.

At two o'clock the answer to the ultimatum arrived from Razakafidy, the Governor, who expressed the intention of his Government not to rescind the offensive proclamation, and within five minutes afterwards fire was opened upon the fort from the guns of "Le Berceau" and the "Conway," whilst "La Zélée," at the head of the line, directed her fire on the flank battery to the south.

The fire was returned from the Hova batteries, not very energetically, but with astonishing precision, their artillery being directed, according to M. Desfossés, by a renegade Spaniard. After firing had gone on for a quarter of an hour a violent conflagration in the vicinity of the northern battery bore witness to the effect of the shell; and by half-past three, as a great number of shell had been observed to burst within the fort and other battery, it was considered by Captains Kelly and Desfossés that a large proportion of the defenders must have been destroyed, and that it was time to land some detachments to take possession of the place, and terminate the operation before evening set in. Accordingly, 100 sailors and 68 marines of the "Berceau," 40 sailors and 30 marines of the "Zélée," with 80 blue-jackets and marines of the "Conway," were embarked in 14 boats in perfect order, forming a line parallel to the shore, the English on the right, the "Berceau" in the centre, and the "Zélée" on the left.

At a given signal the boats proceeded simultaneously under cover of the fire from the ships, and the combined French and English force landed and formed in order of attack on the beach at 200 yards from the fort.

		Men.	
Right (English)	"Conway"	80	Lieutenant Heseltine.
Centre (French)	"Berceau"	168	Lieutenant Prevost de la Croix.
Left „	"Zélée"	70	Captain Fiéreck.
	Total.....	318	

Two small howitzers on mountain carriages were taken by Lieutenant de la Croix, and brought along in the centre.

The Hovas contented themselves with firing some rounds of case during the disembarkation which produced but little effect, and the combined force advanced at a quick pace against the "Malagasy" work, which was in a great measure screened by thick groves of bushy trees. Some men of the "Zélée," with others of the "Berceau," under a midshipman, gained the south battery, where they spiked three guns, overturned two others, and drove its defenders into the principal fort, which the French in vain attempted to enter with the fugitives. Whilst the south outwork was thus captured the main body marched straight up the glacis and outer slope of the enceinte and crowned the covered way, thinking it was the fort itself they had

thus taken; on reaching the summit the mistake was apparent, there was a broad deep ditch between them and the body of the work, the escarp of which was 30 feet high, and the attacking party had brought no scaling ladders. The assault failed inevitably. From their casemated galleries the Hovas were able to fire on the allies, who maintained possession of the outer works for forty minutes, when, their ammunition failing, Captain Desfossés sounded the recall on the beach and the various detachments retired and, re-forming in their original formation on the shore, re-embarked with their guns, their killed and wounded, at least the majority of them.

Repulse at Tamatave.

		Killed.		Wounded.	
		Officers.	Men.	Officers.	Men.
English,	"Conway"	0	4	1	11
French	"Berceau"	2	7	1	32
	"Zélée"	1	6	0	11
	Total.....	3	17	2	54

Total casualties: Officers, 5; Men, 71 = 76.

The "Berceau" was struck by thirteen shot, one of which broke the fore topmast. The "Zélée" was also struck several times and also had her topmast cut. Unfortunately, thirteen bodies, which could not be carried off, were left in the hands of the enemy, and when the expedition sailed away, the sailors could see the heads of their comrades fastened on poles along the beach, where they remained for nearly ten years, until the merchants of Mauritius and Réunion subscribed 3,125*l.* for the renewal of trade in 1854, when the heads were taken down and interred at Ste. Marie. Thus ended this unfortunate expedition, which was not renewed, the policy of the Governors of Mauritius and Réunion being disavowed by their respective Governments in Europe.

This effective repulse of the two great marine Powers by their fort at Tamatave naturally gave great impulse to the military pride of the Hovas, and encouraged the old, or what may be termed the idol party, to keep aloof from all exterior intercourse, and, in consequence, Imerina, and indeed all Madagascar, was closed to European influence for a period of nearly twenty years.

1849. *Insurrection at Nosi-Bé.*—An attempt to drive the French out of Nosi-Bé was made by the Sàkalàva in June, 1849. The Sàkalavà Chiefs, Linta and Tsimandroho, who had ceded Nosi-Bé to the French eight years previously, left the island, and the Sàkalàva assembled at Ankify on the mainland opposite Hellville at the end of June, and landed during the night in considerable numbers on the island. The small French force available consisted of sixty Marine Light Infantry and 800 liberated slaves, who however could not be depended upon and were armed only with spears. The only Officer, a Lieutenant of Marines, was unfortunately

shot whilst making a reconnaissance, whilst the garrison held an entrenched position defended with two small guns in a sand-bag battery. At daylight, the Sàlakàva delivered their assault, led by some twenty or more of their *Ombiasy* and fanatics. They were permitted to advance close to the guns, which being suddenly unmasked fired two rounds of case, by which thirty-two of the Sàkalàva were killed, upon which the savages fled and left the island precipitately. On the following day reinforcements arrived from Mayotte, and the Colony was placed in a state of defence.

1851. *Sàkalavà Raid on Tafondro.*—After the Sàkalàva revolt of 1849, Tsimandroho again took up his residence under French protection at Tafondro, in Nosi-Bé. But in April, 1851, a party of 500 Sàkalàva crossed over from the mainland, and overcoming the small French post, killing the corporal in charge, murdered Tsimandroho, cut off his head and carried it off as a trophy to their country at Morontsanga.

The Commandant of Nosi-Bé sent over 600 Sàkalàva allies to punish their compatriots. But on reaching Morontsanga, they found the place deserted, so they burnt the village by way of reprisal.

1856. *The Affair of Bavatoubé.*—A French factory was established at Bavatoubé by M. Lambert on the coast at the entrance to Passandava Bay, almost immediately opposite to Nosi-bé, the French Colony before mentioned, in 1855. Throughout the locality deposits of bitumen and mineral oils were exploited for nearly twelve months by the *employés* of Lambert's company, who constructed buildings and fortified the station with a regular rampart and stockade with five ships' guns mounted in position, whilst a number of Mozambiques, *i.e.*, slaves, were armed, and the position was deemed well defensible and able to hold out in case of any attack until assistance could arrive from Nosi-Bé, which is within signalling distance, and where a French man-of-war is generally stationed. M. Lambert placed M. d'Arvoy, formerly French Consul at Port Louis, in charge of the establishment, but the Hova Government warned him, when the former departed for Europe in 1856, that having learned of the armed occupation by a foreigner of a position at Bavatoubé, he would remain there at his peril. M. d'Arvoy seems to have trusted to his armed retainers and defences and remained at his post. Accordingly, on the 19th October, a force of Hova soldiers proceeded to Bavatoubé, and M. d'Arvoy refusing to surrender, the place was surrounded and captured. M. d'Arvoy and a number of his followers, Creoles and Sàkalàva, were slain. The Hova commander took 100 of the *employés* prisoners to Antananarivo, with the guns, muskets, and a quantity of ammunition; the place was razed to the ground and has not since been occupied.

This affair, eleven years after the unavenged repulse at Tamatave, naturally rendered the Chiefs of the Hova Government still more arrogant in their dealings with Europeans.

1859. *Bombardment of Mahogoulou.*—The constant shipment of so-called free labourers (*engagés*) from Baly Bay on the north-west coast led to several disastrous revolts on board the French ships.

In one instance, in 1859, the "Marie Angélique" was on the point of sailing for Réunion, when the Malagasy on board attacked the crew, who jumped overboard and swam to a neighbouring vessel, ran the "goëlette" ashore, burnt and pillaged her.

On this event becoming known at Nosi-Bé, Captain de Langle took his ship "La Cordelière" and anchored off Mahogoulou, the village of Outzinzou, in Baly Bay, on 13th February, 1859. A boat was sent on shore to bring off the Jesuit Missionary Fathers, and attempts to negotiate were made in vain. The French boat was fired upon by the Sàkalàva, who deserted their village and took to the woods. Whereupon the guns of the "Cordelière" opened fire, and with a few rounds of shell destroyed the village of Mahogoulou.

Six months afterwards the "Cordelière" returned, found the village rebuilt, and exacted a fine of 14,000 dollars, which fine was paid in cattle.

1861. The border lands between the Hova and Sàkalàva peoples at this time were desolate. Long tracts of country, twenty or more miles in width, were destitute of inhabitants, and the Hova villages, as well as those of their allies, were, even with that width of open neutral territory, never safe from night surprises and assaults, in which the cattle were driven off, the men killed, the women and children hurried into slavery, and the village left a heap of blackened stones and ashes.

At length the Queen died, in 1861, and her son, Radama II, came to the throne. The new King had been thoroughly disgusted by the sanguinary scenes of his youth, and his first act was to proclaim that the soldiers should only muster once every two months, and he also at once reduced the *fanompoana* or service required of the non-combatants.

The next act of the liberal-minded Sovereign was to set free all the Sàkalàva captives. He then sent all the Sàkalàva chiefs in the Hova power back to their country loaded with presents and messages of goodwill to their people. He also sent what they would esteem more than any gift, the bones of the chiefs who had died in captivity, that they might be buried in the tombs of their ancestors.

The Sàkalàva, who had lately plundered a portion of Vonizongo, at once reinstated their captives and restored what property they could. Embassies under selected chiefs of the Sàkalàva were sent to Antananarivo to accept the welcome friendship and to offer allegiance to the King and Hova Government, the tribes along the whole line of country, with scarcely an exception, following this example. Radama II received these embassies with frank good nature, feasted them, and dismissed them with presents to their homes. They offered to surrender their arms. "Keep them," he said; "when I want your help, you will have them ready."

The Sàkalàva agreed to furnish recruits to the Hova Army. The Hova people extended to the west, the Sàkalàva to the east, and occupied the adjacent no-man's-land; the inhabitants interchanged visits and peace prevailed throughout the country.

Revolt of the Sàkalàva.—In May, 1863, the unfortunate Radama was slain in the course of a palace revolution.

The Sàkalàva heard with indignation of the death of Radama, who was their friend, and at once invaded Vonizongo, killing some herdsmen and driving off 800 oxen of the Prime Minister of the new Government. They remembered the ravages they had suffered during the former Queen's reign, and expected their renewal under Rasoherina; they therefore collected their forces and invited other tribes to join them in a march on the capital to avenge Radama's death and destroy his murderers.

No message of peace or friendly explanation of the cause of the revolution and change of Government was sent by Rainivoninahitraniony, the Prime Minister, to these tribes in revolt; but a force, accompanied by some guns, was despatched under the command of one of the chief actors in the recent *coup d'état*. The usual Hova strategy was employed, viz., treachery. The Hova force moved quickly before the allied tribes could collect, and after proposing negotiations, in order, as they said, to draw them together, attacked them, opening fire upon them from their artillery, which was masked, until the Sàkalàva were cut off from retreat. The Hova commander reported 2,000 slain, and returned to Antananarivo, followed by a long line of captive women and children and herds of cattle. Rasoherina, however, sent back the captives and recouped the Officers and men with money.

This act of clemency by Rasoherina had no immediate effect on the Sàkalàva, in consequence of the carnage and treachery by which it had been preceded. They declared they would make no peace with the murderers of Radama.

The country continued to be unsafe, and the inhabitants of Vonizongo had to betake themselves to their fortified villages.

Preparations to invade Imerina from another quarter were at the same time threatened. The Antsihanaka and the Ibouèni Sàkalàva assembled on the northern borders of Imerina, and the Governor of Ambohimanga collected a Hova force to oppose them. Neither party, however, crossed the frontier; negotiations were carried on, and an arrangement entered into, without bloodshed, and peace has been unbroken since in Antsihanaka and the north.

The whole island of Madagascar was now considered as but one kingdom, and it was considered necessary to maintain a comparatively large standing army to occupy the garrisons and posts on the frontiers, and at the ports, their chief occupation being the collection of taxes and the prevention of smuggling.

Modern Reforms.—During the five years of Queen Rasoherina's reign (1863-68), no special energy was shown in direction of military organization, and the army appears to have then become less efficient than formerly. In consequence, some of the Sàkalàva and Anosy tribes, only nominally under Hova authority, became restless and even threatening.

On the accession of Ranavalona II in 1868, under the present energetic and able Commander-in-Chief, Rainilaiarivony, the attention of the Government was turned to the reorganization of the army.

In 1872 Rainilaiarivony applied to the Governor of Mauritius for an English drill-sergeant. This application was complied with, and a non-commissioned officer was sent to Antananarivo, who trained a certain select number of young men of good family, who, when qualified, drilled the soldiers. This non-commissioned officer remained for about two years, when he was replaced by another sergeant, who remained three years. By this means the native army was supplied with a number of young Hova Officers capable of instructing their men, and foreign assistance was no longer needed.[1]

In 1867, shortly before the death of Rasoherina, and subsequent to the payment of the French indemnity at Tamatave, the Hova Government thought that a demonstration of power was needed on the east coast, Radama's famous march half a century previously forming a good precedent, as well as that by Ranavalona I in 1845. The Queen was hopelessly ill, and the pretext was made that a Royal progress to the coast would be for the benefit of her health, and the salubrious hot springs of Ranomafana, near Andevoranto, were recommended by the doctors to the moribund Sovereign. In June the Queen's camp equipment and the escort were mobilized: roads were cut through the forest, supplies furnished to the different stations *en route*, and the order of march arranged. On the 10th the Queen's palanquin left the palace, and the Army, with followers, numbered upwards of 60,000 men. One month was occupied in moving this enormous retinue to Andevoranto, where the force remained until the end of August, returning by the same route to the capital. The fatal casualties from sickness and exposure alone, during this progress, amounted to 1,000 deaths, whilst the number of sick was in proportion. The Prince Ramonja and several Officers of high rank succumbed to fever, and the Queen herself did not survive her return to Antananarivo many months.

This march, which was made slowly and with ample preparation, gives an example of the unhealthiness of the line of country between Antananarivo and the east coast.

1873. In 1873 several of the Sàkalàva tribes in the south-west had become so turbulent and daring, that it became necessary for the Hova Government to adopt some active measures in order to prevent further difficulties. Under the circumstances, the Government appeared to have had no alternative but to enforce submission, and with this purpose, arrangements were made for sending out two military expeditions under two of the chief Officers in the Government. (One of them, Rainivoninahitriniarivo, was subsequently well known as the principal Ambassador to Europe in 1882.) The two forces together numbered 5,000 men in addition to a large number of *dekana* and personal followers. The Prime Minister addressed the expeditions before they started, and instructed the Officers to deal honourably with the Sàkalàva, and do their best to settle matters without

[1] During the residence of the second drill-sergeant, the French Consul, evidently a little jealous of the preference shown to English instruction, procured a young French Officer from Réunion, and offered his services to Rainilaiarivony. This offer was accepted in order that no offence might be given to the French.

bloodshed if possible. This advice was well received and faithfully acted up to by the commanders. From numerous reports the Europeans at the capital received of these expeditions they had every reason to believe that they were conducted in an honest, honourable, and straightforward manner. The conduct of the Officers and men towards each other in the camp and on the line of march, their dealings with the people after they had arrived in the enemy's country, the manner in which they endeavoured to settle the matters in dispute, and, in fact, the general management of the operations—all seem to have been characterized by a spirit of the highest discipline and self-restraint—a great contrast to former operations of the kind.

The object of the Government in sending these expeditions was not to obtain territory, military renown, or plunder, but simply to protect the weaker tribes which had been cruelly oppressed and robbed. The different Officers in charge appointed trustworthy overseers to the camps to prevent all disorder and unfairness, and especially took care that none of the Officers should give extra burdens, consisting of their own baggage and provisions, to be carried by the bearers under their authority. Strict orders were enforced that no acts of violence or oppression on the people along the route, through whose villages or markets the line of march might lead, would be permitted; guards were stationed at these places to see the orders carried out, and all offenders were severely punished. Accommodation was provided for the sick, and Officers were known to give up their *filanzans* (palanquins) to them, and even to assist the bearers. When treating with the enemy the chief Officers behaved with dignity and firmness, and, conscious of their strength, never permitted oppression or plunder. Only one engagement was fought, when the town of the rebel chief, Mahabo, was burnt as a punishment, and the expedition returned without a hitch, having accomplished the object for which they had been despatched. The greatest harmony prevailed throughout, and the manner in which the business was carried out had a most lasting moral effect on the Sàkalàva tribes with whom they came in contact. No better proof could be wished of the solidity of the army reform which Rainilaiarivony had initiated and carried out in spite of opposition and jealousy of the older chiefs in Imerina.

1876. *Reorganization.*—For many months during 1876, especially in June, July, and August, great excitement prevailed throughout Imerina, for a military conscription was talked about and anxiously expected, but two preliminary matters required to be attended to before the proposed conscription could be carried out. One was the reorganization of the existing army, involving the redistribution of Officers and brigades, and the discharge of old and worn-out veterans; and the other was the reorganization of the *deka*,[1] which of late years had become a scandal of large proportions; for most of the higher Officers had appropriated to themselves a much larger number of followers and personal attendants than they had any right to. Both

[1] *Deka = aides-de-camp.*

these measures of reform required delicate yet firm handling, and any weakness or hesitation might have led to a revolution, and cost the life of the Minister and the ruin of the country.

At last on the 6th June, a grand *Kabary* was held at Imahamasina, when a message from the Queen was addressed to the *Foloalindahy* (literally = *the ten thousand*), that is the army. By this message all who had *deka* were required to make out lists of their names, and send them in to the Government within a fortnight. The teachers were also required to write down and send in lists of all their scholars. On the 13th July, after the numbers of *deka* possessed by each Officer had been sent in to the Government, another *Kabary* was held, at which a Royal Message was read by the Prime Minister. It condemned in very strong language the recent action of the Officers in withdrawing young men from the army and other departments, and attaching them to themselves as their own private followers. The address concluded by fixing the number of *deka* which each Officer was entitled to possess, and by declaring that, in future, any one exceeding that number would be treated as a transgressor of the law. The number of *deka* allowed is, therefore, now regulated by the honours of the Officer, which also indicate his rank, social position, and regulate his official standing. The highest number of *deka* which any Officer can now possess under the new regulations is 30, and this is only admissible in Officers of the highest rank, viz., of 16 honours. Those of 15 honours are allowed 25 *deka;* 14 honours, 20; 13 honours, 15; 12 honours, 10; 11 honours, 5; 10 honours, 3; and 9 honours, only 1; the rest are not allowed any.

By this law a large number of young men improperly kept away from military service were added to the army, and they were at once ordered to join as recruits, and were drilled with all possible despatch.

1878. In July, a great military review took place at Imahamasina, the large level plain west of the capital. This review extended over three days, when each company was reviewed separately, and went through the various exercises satisfactorily. The foreign words of command were ordered to be abolished, and have now been given in the Malagasy vernacular.

1879. On the 25th March, a great *Kabary* was assembled, and the popular anxiety in regard to the apprehended conscription was set at rest.

The following are the principal features of the new system of recruiting the Hova Army:—

I. All classes are required to serve in the ranks, none being exempt except—(*a*) the sick and incapable, (*b*) pastors of churches duly appointed and recognized, (*c*) such as the Queen shall be pleased to free.

II. Instead of service for life, the time of service is fixed at five years, while those who are diligent and acquire the necessary qualifications before the expiration of that time will be treated with special favour.

III. The enrolment of recruits will not be at irregular intervals, but take place annually.

IV. The soldiers will be no longer called up to the capital to drill, but will be drilled in their own districts.

V. The soldiers will only be sent to distant garrisons for periods of twelve months, and the posts will be regularly relieved annually.

A number of minor regulations are given, with a view to prevent oppression, bribery, and deception; whilst fines varying from 10 to 100 dollars are imposed on any found guilty of such misdemeanour.

Immediately after the publication of this *Kabary*, large numbers of young men were enrolled and at once placed under instruction; and on the 8th January, 1880, a review of these new recruits was held at Imahamasina in the presence of the Queen, and was declared to be highly satisfactory.

1881. *Admiral Gore Jones's Report.*—Admiral Gore Jones proceeded to Antananarivo in July, 1881, and in his report to the Admiralty he mentions that he considers the Prime Minister one of the ablest men he has ever met. He (the Prime Minister) had given cohesion to the Hova nation, and drilled, armed, and formed an army of 40,000 men, and thus prepared the way for his people to govern the whole island *de facto* as well as *de jure*. His great difficulty was want of money. They had no revenue, except import duties; and in order to buy arms he had been obliged to get, occasionally, a *squeeze* on property, but this had to be done very judiciously.

The Hova troops were twice reviewed before Admiral Jones, who states that they are carefully drilled in the manual and firing exercises, but had only recently been armed with rifles. The words of command, originally given in English, were then being altered into their own language. Great attention was being paid to the drilling of the recruits, and some 40,000 men were said to be available.

I had intended to give some account of the late operations in Madagascar from 1883 to the present year; but I find that the present paper has already reached the limits that can be allotted to the subject, and, therefore, I must postpone the notice of the recent and present events to another occasion, more especially because there is some reason to hope that the present operations may be brought to a termination this season.

However, at the expressed desire of our Chairman, I must not conclude without a brief reference to the recent operations of the French in the country which was once named "*La France Orientale.*" Of the rights or the wrongs of the much-vexed Madagascar Question it is not for me to judge or express my sentiments here. For certain diplomatic reasons it was thought proper by the Republic to use force against the Hova Government, and in accordance with the latest practice, hostilities were commenced, without any formal declaration of war, by the destruction of the Hova posts at Morontsanga and Bemaneviky, on 8th May, 1883. The port of Mojangà was bombarded next by Admiral Pierre on the 16th May, a

force landed and the place occupied. The French next proceeded to Tamatave, whence an *ultimatum* was sent to the capital, demanding certain conditions which were to be accepted by the 9th June. The terms were refused by the Hovas, whereupon the French opened fire on the fort of Tamatave from the six ships of the squadron. As Captain Charles Johnstone, R.N., is present, we may venture to hope that he will give the audience some of his personal experiences of that trying time, when a number of distressed British subjects depended upon him for protection; and when the presence of H.M.S. "Dryad" exerted a moral influence, of wonderful proportion considering the inferior size of the sloop and her incapacitated armament. The Hovas, who had never exhibited their flag, retired to their entrenched position at Manjakandrianombana, some 6 miles in rear of Tamatave, where they have since maintained a defiant attitude.

The French Admiral, as we all know, after an unfortunate illness, was summoned back to France only to die, being succeeded by Admirals Galiber and Miot. The operations have since consisted of the repeated shelling of all the small stations, which can hardly be called ports, but landing places, wherever the Hovas have established Custom-houses. Vohemar was taken last year at the close of the season, and I am informed that when the Hova garrison of Ambanion was driven out of that place, a number of Antankara pursued the retreating garrison and massacred a large portion who were unable to escape. By the latest news the Hovas are said to be investing Mojangà, but until authentic intelligence is published, no opinion can be expressed on the tactics of the Hova soldiers, or on their behaviour in the field. One thing appears certain, that the Hova military authorities have steadfastly set their face against the savage and barbarous practices which were characteristic of their warfare in former days. This advance in civilization has received lately most notable illustration by the kind treatment bestowed by the Hovas on the French prisoners in their hands.[1]

[1] A despatch from Admiral Miot, dated Tamatave, September 25th, gives the following particulars:—The column advanced to within 500 metres of the enemy's entrenchments, and notwithstanding the difficulties experienced owing to the ground to be traversed, carried on a brisk artillery engagement with the Hovas for a space of two hours. The French were thus made aware of the importance of the new lines of defence constructed by the Hovas and the strength of their armaments, consisting of Remington rifles and several cannon of long range. Simultaneously with the advance of the troops the war vessels in the roads bombarded the heights of Farafate, while a landing party from the "Naïade" effected a diversion on the extreme left by feigning an attack on the village of Ampassiemandour. The Hova forces around Farafate are estimated at from 7,000 to 8,000 men. The French column started at 5 A.M., and re-entered their cantonments at five in the evening, having lost 2 killed and 31 wounded. The Admiral adds that on the west coast of the island, on the night of the 29th August, the Hovas set fire to the village of Zougoo, situated 24 miles from the military post of Amboudimadirou. Leaving a sufficient garrison to defend it in case of attack, Captain Penneguin, the Commandant, went in search of the enemy with a small column of 120 men, of whom 70 were Sàkalàvas. He came up with the Hovas on the following day in the valley of Sambirano, and completely routed them with heavy loss. The French had 1 Officer killed and 2 Officers and 9 men wounded. The general health of the troops on shore and on the vessel in the harbour is satisfactory.

Captain CHARLES JOHNSTONE, R.N.: Mr. Chairman, ladies, and gentlemen, I have some diffidence in beginning a discussion of this sort, because my acquaintance with Madagascar is very small compared with that of many who are here present, and therefore in any remarks which I may make about that country I shall be prepared to be corrected. The native races of Madagascar are not, as might be imagined, all one people. They are composed of different tribes. Some of them are curly-headed races and others straight-haired. The straight-haired are Hovas, and I believe I am correct in saying that they are the only straight-haired race in the island. The others apparently are connected with the native races on the mainland. The origin of the Hovas is very obscure, in fact, they have no written history. Their language was only a spoken one up to the time when the Christian missionaries from England began to educate the races, and reduced the language to writing. Up to that time the race was a very savage one; in fact, they have no records at all. From various investigations it is concluded that they have in some way found their way across from the islands of the Eastern Archipelago to Madagascar, and have gradually worked their way up to the centre of the island, and established themselves in the province of Imérina. We have by a sort of courtesy of late called the Queen of Madagascar by that title, but I am bound to say I think her claim to it is not derived by actual right. Radáma I, as our lecturer has told us, was the first to extend the rule of his race from the province of Imérina down towards the coast-line; but there is no question about it, the Hova race is not absolute all over the island, nor over a very large part of it; a portion of it does not at all submit to the Hova rule, and especially the part marked on the map Tullear, where the Hovas are utterly unable to restrain the barbarous people. Therefore, there is something to be said for the French in the action which they have taken with regard to Madagascar. It would be difficult for anyone to approve entirely of the way in which the French have gone to work, but I think if any European Power had arrived on the coast of Madagascar, and found many parts of the island unoccupied and not under Hova rule, they would have established themselves there, and considered they had a right to do so. The fault that must be found with the French by all civilized people is that they have not gone there with a distinct view of improving the people, and, in fact, it is very difficult to say that they have gone there with any distinct view at all. To my mind it may fairly be called a filibustering expedition. In undertaking the conquest of a country I imagine you incur certain duties and responsibilities, and the French do not seem to me to have gone entertaining that view at all, or with the sense of those responsibilities. The result is that they have an insufficient force there, a force which does not appear able to overcome any difficulty other than that of just keeping small places on the coast-line. But of that I hope the lecturer will tell us something further. It would be very interesting if he could tell us what possibility there is of a European force getting up from Tamatave to the capital Antanánarivo, and taking possession of it; and, moreover, our Chairman might give us complete information on that subject, as he made the long and difficult journey up to the capital itself. Therefore, it would be very interesting to know exactly what prospect there is of the French, with the power they have, establishing themselves and conquering the island altogether. I believe one of the principal reasons why the French have got there is that they were pushed on by the Colonists of Bourbon. Madagascar was a sort of Eldorado, a promised land to them. They were urged on by different people to go to the conquest of Madagascar, but now, not having been able to get on as rapidly as they hoped to do, the thing has rather fallen through. It is supposed that there are considerable riches in Madagascar in the shape of mineral wealth, but the present Prime Minister, who is virtually ruler of the country, has with, I think, perhaps much wisdom, absolutely refused to allow any search to be made in the soil for precious metals. He understands thoroughly well that if gold or silver were found, there would be an influx of certainly not the best people from other countries, and that the country would be overwhelmed with foreigners of a very doubtful sort. Therefore, he thinks, in the present state of civilization of the country, it is very much better to discourage it, and I am inclined to think he is perfectly right. If the French had gone there with a single object I do not know that there could be so very much to be said against their position, but when they

went there the other day they suddenly came down upon the Hovas, who undoubtedly looked upon themselves as possessors of the whole island, and they demanded all the northern portion of the island down to the 16th degree of latitude, which was certainly a very strong demand. Since that time they have been receding from their former demand, and it is likely now they would be satisfied with but little. It is very singular to observe how, in spite of very serious menaces from a great and overwhelming nation like the French, the Hovas have still been enabled to hold out. One of the things greatly in their favour is that there are no roads in the island. There is not even a road that a pack-horse can go along. In going from Tamatave to Antananárivo I am told you could not so much as take a loaded pack-horse under the trees. Everything has to be carried up on the backs of men. Everybody who travels is carried in a palanquin, and all weights are carried up on men's backs. This is a very serious difficulty for an invading army, but I believe it is a matter that our lecturer has gone into, and he can explain how it might be overcome. The French are not disposed to go up to the capital from Tamatave. They suppose the best line of advance would be from Bembatoka Bay on the north-west coast by the river to Ikopa. The boats of H.M.S. "Ruby," some years ago, went 100 miles up from the sea, and it was said the remainder of the way up to Antananárivo would be comparatively easy. The Hovas are very far from being a warlike people, and if it comes actually to fighting I am not at all sure how they would stand. Up to the present time the difficulties of the country have been so great that the French have been able to do very little. As I said the Hovas are not warlike, in fact, their plan of fighting is this, they push all the lowest soldiers to the front, and the Commander-in-Chief is always a mile or two in the rear, so it may well be supposed that an army would not fight particularly well in that state. If they have European leaders they will alter that, but the first thing that was done in the case of a recent attack on one of the seaports was that the Commander-in-Chief cleared out and left his troops to do the fighting. The population of Madagascar is a decreasing one, as unhappily the curse of strong drink is amongst them. Rum is manufactured in the Mauritius and Bourbon, and brought over. It is imported by unprincipled traders, and sold to the natives, who drink it like water in many cases. They are utterly ruined; and not only that, but they have a way of making spirits themselves of a most poisonous description, which is undermining the physique of all the northern races. I was told by the French that the Sàkalàvas, the people that the French themselves propose to put forward in opposition to the Hovas, were quite a dying-out race in consequence of their vices. So that it is very questionable what the future of Madagascar with regard to the races will be, and unless they improve, and civilization has a much better effect upon them than it has had up to the present time, I am afraid the native races of Madagascar will gradually die out. The soil is particularly rich, especially on the sea-coast and along the eastern shore. It is a very unhappy thing for some of our fellow-countrymen that they have embarked large sums of money in commercial enterprises, especially in the neighbourhood of Tamatave. Large sugar plantations have been set on foot, and at the time of the French attack, the people who suffered mostly were our own people, natives of the Mauritius as a general rule. Large sums of money were invested in these sugar plantations, and at the outbreak of hostilities it was known that if native labour could not be obtained to gather in the sugar-cane, the crop for that year would be lost. They then said if it were not gathered in at the end of the second year the plants would be entirely destroyed, and this, I believe, in almost every case has taken place. Not only have the crops been destroyed, but the plants also, and the whole money spent on these things with the exception of perhaps a little material saved in the workshops, everything has been absolutely lost. I saw a gentleman in the Mauritius who had been a rich landowner not very far from Tamatave, and I was told he scarcely knew where to look for a meal. This is the unfortunate result of hostilities between Madagascar and a Power like the French, and I think it is a matter which deserves the consideration of civilized people whether war ought to bring such misfortunes not upon people's enemies but upon their friends. As far as our interests go with Madagascar they are principally those connected with the Mauritius. Of course that affects the United Kingdom more or less, but there are very large British interests

connected with the Mauritius, and should the French take possession of Madagascar, as it is supposed they wish to do, I am afraid our interests would die out completely, and this would be a very serious loss to many of our people.

Mr. ABRAHAM KINGDON: I hope we do not mean to let the interest in Madagascar die out. It is a large and important island. The land abounds in mineral wealth, timber, india-rubber, cattle, and rice, and it will produce almost anything. We can get away up into altitudes of about 5,000 or 7,000 feet; we can grow and cultivate many things which can be grown and cultivated in the southern parts of England; then we get a variety of productions on the coast, the differences in the climate being very great. All that is very much in its favour as a country for production. Its woods are almost invaluable, comprising ebony, sandal wood, satin wood, lignum vitæ, and woods the like of which have never been seen here—of beautiful grain. I have woods at home similar to the finest boxwood, and also one of the commonest woods in the country very similar to Spanish mahogany. It was only a few weeks since that a large timber merchant asked me, "Is there in Madagascar any substitute for Spanish mahogany, for we are getting very short of that; in fact, after a time, we shall not be able to get it at all." "Well," I said, "in Madagascar the wood that people use for making their floors and doors and the general wood-work in their houses is equally close grained and good with Spanish mahogany." Then as to mineral wealth, we do not want to say too much about that, but I think we are all pretty well agreed that Captain Johnstone is right in saying the Government is justified in prohibiting the influx of a very doubtful class of foreigners, but I think when the right time comes it will be a splendid thing for the Government to allow mines to be worked under supervision, or under the royalty system. I think it would add very materially to their ability to protect themselves. It is the money they want; they have the men, but it is the money they want wherewith to buy arms, and they are perfectly justified in defending themselves against aggression. And they are men of brains and good natural parts. Those of us who have lived long in the island know very well that the Malagasy are capable of doing anything that it is possible for a European to learn. I could show you some samples of beautiful work in water-colours, also in gold and in iron work. They are not barbarous, as some people imagine. They are an intelligent race, capable of advancement, and no man who lives amongst them and has any feeling of brotherhood at all can experience their hospitality and generosity without feeling an affection for them. I therefore speak with feeling when I say that I hope Englishmen will not lose interest in Madagascar. We want to be cautious and careful in order to retain our interests there. We do not want the French to take our place in commerce or in instructing the people in a great deal in which we do not believe. The outcome of the instruction of the Hovas has been their superior position, and what Captain Johnstone has said about the decimation of the Sàkalàva population through the exterminating effects of intoxicating liquors does not apply to the people in the interior, where there is a prohibitory law, and the result is that the people are increasing and not decreasing. It therefore behoves us not to give up our interest in these Malagasy, but to do all we possibly can to bring about an amicable and peaceful settlement of this long-vexed question.

Mr. COUSINS: There is just one point that occurs to me arising from the discussion, that is, the question of the position which Europeans might occupy in the island of Madagascar. I do not think the Malagasy will ever be able to develop their own resources unassisted; I have thought so now for some years. I think they need European guidance; they need the stimulus of European thought and enterprise; but under guidance, with help, they are certainly capable of very remarkable development. Before this difficulty with the French occurred, I think many of us who were living in Madagascar thought the policy of the Hovas was decidedly false, that they were seeking to repress the energy of Europeans, that they were putting difficulties in the way of the introduction of European capital, and so on; but the French have completely turned one's thoughts from this into other directions through the foolish and I may say the cruel way in which they have gone to work. They had practically no grievance that other European nations had not. Their difficulties were the difficulties of all, and could there have been anything like a joint protest or a joint action, I think a certain amount of pressure would have been very useful to the Malagasy.

The resources of the country were to a large extent shut up, whereas they ought to have been developed, and I doubt whether, excepting as the result of pressure, there would have been any great development. But the French have gone to work in such an altogether extravagant way—such an unjust way—trumping up charges which are positively babyish when you come to look into them, that it is almost impossible to look at the matter in the fair all-round way in which one would naturally have been disposed to do, and whilst they are acting as at present our sympathies are naturally with the weaker party. But apart from that, I think the influence of Europeans ought to increase rather than decrease in Madagascar, and if any arrangement could be made by which this present difficulty could be overcome, and a satisfactory treaty made with the French—our own is made—and if freedom could be given to people with capital to introduce, I think the future of Madagascar would be one in which we should all rejoice. I am personally very much indebted to Captain Oliver for the interest and sympathy he has shown with the island, and especially for the excellent book which he has recently written on the true story of the rupture.

. The Rev. G. SHAW: We have heard a great deal this afternoon of the Sàkalàva; we have heard that they are unconquered, that they are a savage race, that they are divided into a great number of tribes, and that those tribes are continually fighting one with another. Now I think this requires a little explanation. These so-called tribes, if I understand it aright, of the Sàkalàva who are so continually at war are not, as we should account them, tribes in the true sense of the term. Each is a small community, generally speaking, consisting of one family. That is to say, the whole inhabitants of a small hamlet or village are united by some kind of family tie; they are ruled over by a so-called king, and the various jealousies which arise may be looked upon as family jealousies—jealousies between the head of one family and the head of another, and these have caused the various raids which I think should hardly be called wars. It has been represented that in these wars very few are killed, that perhaps one is wounded, or that one may be killed, and that the news of this spreads from one village to another, and that then the war is over. Now I think this creates a slightly false impression. It is quite true that there have been wars among the Sàkalàvas, but I do not think that such raids from village to village ought to be dignified by the name of wars, and by being so called they certainly give a wrong impression to those who live outside Madagascar, and do not know exactly how the matter stands. Another point in regard to the wars which has not been brought with sufficient prominence before us—it may be in the paper, but unfortunately I have not seen the paper—is that we have heard that the Hovas in former wars, that is, under Radáma I and under Ranavalona I, were excessively cruel and savage. There is not the least doubt that this is true. When the Hovas went with the endeavour to overcome some of the surrounding tribes, their conduct of the war was doubtless very cruel; they massacred all those who were unfit to be slaves, that is to say, those who were too old or too infirm to be used in after-time as slaves in another part of the country; but since the time of Ranavalona I there have also been wars which correspond in very great measure to the wars of Radáma I and Ranavalona I so far as the object is concerned, that is to say, the Hovas have been sent from the interior of the island to some of these outlying tribes in order to subdue a rebellion or to make them thoroughly subject to the Hovas. *These* wars have been marked with anything but severity; indeed, they have been characterized by a greater amount of leniency and mercy than is very often shown in so-called civilized warfare. A Hova army was sent on one occasion to the south-west in order to overcome a certain rebellion, and it is well known that the late Queen, before despatching the army, gave explicit instructions that unless it was absolutely necessary, no one was to be killed; it was to be a war in which, if possible, bloodshed was to be entirely avoided; and so stringent were the Queen's orders to her Officers that this was actually the result. I believe I am correct in saying that although some 10,000 or 15,000 soldiers and camp followers were engaged in that war, not a single person was killed: and this has marked all subsequent wars in Madagascar. There has been, I believe, no war in Madagascar since the time that Christianity actually took possession of the minds and hearts of the rulers, which has been marked by anything that can be called cruelty, but rather on the other hand by the

utmost mercy. This, I think, it is important should be made very clear, and I have therefore laid some stress upon it.

The CHAIRMAN: Before Captain Oliver sums up I should like to call attention to a few dates. Madagascar was discovered by the Portuguese under Ferdinand Suarez in 1506, and to them belong all the honours of first discovery. When we had some discussion with regard to Delagoa Bay, the matter was referred to the President of the French Republic, and he decided against England, because the Portuguese were the first discoverers, and that is a very important point to be remembered in dealing with the present position of the French in Madagascar. In 1509 King Emanuel of Portugal sent Lopez de Sequera, and the following year Juan Servano, to examine the country and organize an establishment for trade. Missionaries established themselves at that period, the Christian religion was introduced, and several natives, including the son of a great chief, were sent to Goa for education. However, they disappeared, like all the early settlers, and in 1595 the Dutch formed trading settlements, the remains of which are seen to this day. They also disappeared, and in 1643 the French, in the days of Richelieu, formed La Société de l'Orient, and to colonize Madagascar was their great object. They came there, and established themselves due south at Fort Dauphin, having previously prospected the country a little. Flacourt was the first Governor, and five or six years after his return to France at that period he wrote a "History of Madagascar," and in that history he states that there was an English Colony of 400 in the Bay of St. Augustine in 1644. Now a Colony is not a mushroom; it does not spring up in a night; and this shows that the English had a Possession or Colony in Madagascar a long time before the French. Some of the French attempted to desert from Fort Dauphin, and found their way to St. Augustine, to take shipping for Europe; but on arriving at the Colony it was found that there were 300 or 400 graves, the Colony itself having virtually disappeared. It also showed another thing, that at that period Madagascar was a general place of call for shipping. There seemed to be no difficulty to get to or fro from it, and therefore the only conclusion we can come to is that the English were there as colonists before the French. The right of discovery belongs to the Portuguese, and the introduction of civilization first to the Dutch, then the English, and lastly the French. In his lecture Captain Oliver speaks of thirty or forty years ago, but the whole world has altered within the last ten or twenty years, and the Malagasy have altered with it, and now I consider that the Hova population, governed by the Prime Minister, are as moral a people in every respect as can be met with in Europe. They are kindly-hearted, hospitable, and well-mannered. I have met men there as perfect gentlemen as you could meet in any room in London. We have had their Ambassadors over here, and these men were gracious in their manner, pleasing in their conversation, and in fact thorough gentlemen in every respect. It must be borne in mind, too, that this is due to themselves as well as to the missionaries. They had received their education from the missionaries, and it is being handed on to the third generation. There is no doubt but that they are a highly intelligent people. If you went into the rooms of Mr. Rassange, who is well known to many here, you would find there all the standard works of English authors, and he has read them all. How, then, can the people to whom he belongs be called savages? The journey that I made up to the capital occupied six weeks, and if you were to ask me whether it was possible for an army to go up there I should say certainly not. We all travelled in filansanos, which are like a child's perambulator stuck on a couple of poles, the covers of which were painted to keep off the eternal wet. It was with the greatest difficulty that we manœuvred these filansanos through the fissures of the rocks and across many of the streams, and when traversing the forests we were two days without seeing the light of heaven. If there were a decent enemy to oppose an invading force I believe that not one person could get up to the capital. The inhabitants of the villages pay no taxes, that is, those living on the high road up to Antananárivo; they are, therefore, obliged to give Government travellers free lodgings and entertainment, and thus at each village the number of rooms we required were cleared of the people, animals, poultry, &c.—for they all lived together—and, then some new pieces of matting were spread over the old filth and dirt; and hence new matting is the name applied to the scriptural trans-

lation of hypocrisy. Their language is expressive, and sentences are used for words: for instance, the name of a turkey-cock is "the bird not to be afraid of," because they soon found that though it made a good deal of bluster there was nothing in him to cause fear. Our marmeeds (domestic slaves) were soon drilled in placing properly everything required, so that our European servants had but little to do besides making the beds and arranging the meals. When we arrived at our halting village we generally found an ox stretched full length on its side, with its four legs tied up, and a number of turkeys, geese, fowls, sugar-canes, and parcels of rice around it. Then a deputation waited upon us, headed by the chief man of the village, who made us an address of welcome, expressing their pleasure at seeing us, and enumerating the offerings they had brought. We always paid them for their presents pretty nearly the full value, so that they did not suffer anything. The houses were made of rushes, and thatched with palm leaves. That was the case until we got on to Hova ground; there we found adobe buildings and houses made of rough sun-dried bricks, and placed on far more favourable sites than among the coast tribes. When we were about 50 miles from the capital we met a deputation of five gentlemen of the Queen's household, which was considered a great honour. Two days afterwards, a deputation of higher officials met us, and we had a repetition of the first reception. On the sixteenth day we halted half-an-hour from the capital, to let us rest and put on our uniforms for the grand entry the next day. Here we were visited by nearly all the foreigners in Antananárivo. During the last three days of our journey we were in the Hova province of Imérina, and there was a marked improvement in the condition of the land and houses; the rush hut had disappeared, and cottages were built with solid adobe walls, or of rough bricks, and as we approached the capital the houses got better and better, and the one I was lodged in was as well got up as an English suburban villa. The next day, Friday, July 1, we made our entry in swords and epaulettes. The band, troops, officials, and all the Europeans joined in the cortége. We were carried in the Royal filansanos, and the chief military officials were on horseback. Although the distance was little over a mile it took us two hours to reach the capital. Shortly after starting we stopped and saluted the two Queens, the whole of the troops presenting arms, and the band playing the national airs. The peculiarity of the whole country we had travelled over was its unevenness; except the Ankay plain it was all up and down. The scenery was varied, and in some places beautiful, it never approaches the grand. The upland soil generally produced a long coarse grass, which seemed well adapted for pasture purposes; the patches which were cultivated did well, and coffee, sugar, manioc, rice, and other vegetables seemed to flourish; but the land as a whole seemed uninhabited, and even the cattle were few. From its formation there can be little doubt that there must be much mineral wealth in the country. The forest we passed through had no fine timber, but a small and twisted undergrowth and tall lanky trees, suffering from excessive moisture and want of sun. When we were received by the Queen it was really a most imposing sight. 200 or 300 people were there; the Queen was on the throne, with a diadem on her head, silks and satins and grand dresses were to be seen in all directions, and all the pretty young ladies sat on the steps of the throne. Altogether the scene was one which bespoke extreme civilization, and everyone was exceedingly courteous in manner. Now, the point we want the lecturer to speak to is the getting of troops up to Antananárivo, and it is with regard to that question that the Prime Minister is such an extraordinarily clever man. He knows very well the difficulty of the roads, and the almost impossibility of passing them, but he does not want foreign troops to reach the capital, and so he prefers the less evil of bad roads to the greater evil of the French coming up. If they altered their route, as they talked about doing, to the north-west coast, I think it would be wise, because the Prime Minister tried to send his troops round in that direction when the row took place and the flags were cut down, which brought on the first part of this disturbance. The misunderstanding arose chiefly from misconception, for the French imagined from the expedition which went up with me that we were taking some very decided steps to do what they were wishing to do—to annex Madagascar. It hurried them, and then they sent out their new Consul, who was well known to be a fireater, and after that all chance of peace was at an end.

Captain OLIVER: I hope it is quite understood that in my paper I did not attempt to give any description of the country, or of its topographical or commercial advantages and disadvantages. I confined my paper entirely to examples of military operations. At the same time, as there has been a great deal of interest exhibited with regard to the topographical features of the Hova country, its distance from the coast, and the character of the harbours, I shall be happy to make a few remarks upon those points. Our Chairman said that there was a question as to the route for troops up to Antananárivo. He has traversed that country himself, I believe in a chair or sedan, but I myself walked up nearly the whole distance, so that I pretty well know what the road was like in 1862. It is certainly a very difficult route for troops, and the Malagasy up to the present time have been wise in not making a road as they have been advised to do by European Powers, especially by those most disinterested people, the French. The present Prime Minister is quite alive to the advantages which will accrue to making a road, and there is no doubt that as soon as affairs are settled, as I hope they will be this session, a very short road will be made up from the coast to the capital, which will then allow of the country being properly developed.[1] The great defence that the Hova country has had from Europeans has been their two Generals,[2] forest and fever, and they have stood them in very good stead, as they have other civilized countries. Of course, civilization must make its way up, and then roads will be made, and I have no doubt that we shall be able shortly to take return tickets to Antananárivo by tramway if not by railway. By that means the fever will be escaped, because it is confined to a very small belt on the coast, and even this may also be conquered by quinine. There are several other points raised by speakers this afternoon, amongst which I think the most important is that in which it has been said that the Malagasy cannot depend upon themselves, that they need European guidance. There is no doubt that any strong European nation, the French especially, if they chose, could march up and take the whole place, but whether it would pay them to do so is quite another question. We ourselves know what our troops have done in a similar country, for it is very much like Afghanistan. Any one of our flying columns could march over the whole place, here, there, and everywhere, and think nothing of it. The French have had not quite similar, but perhaps somewhat parallel, experiences in Annam and Tonquin, and if they like to expend the lives and the money they can do the same; but I do not think it will ever pay them to do so unless they mean solid, permanent occupation, colonization, and administration of the island, and that they are not likely to do, for M. Brisson's Government seems perfectly opposed to anything of the kind. I have no doubt that at the next French elections the one great cry will be not to expend more French lives and money in Madagascar, and to withdraw from the island. In fact, it is almost settled that they will do so.[3] Then comes the question whether the English, French, and other nations may not see it to their advantage to hold possession, by the leave of and in conjunction with the Hovas, of the ports in the north of Madagascar which cannot otherwise be developed. As long as they are under the Hova Government they cannot be developed. They might be made free ports, for they are the most splendid harbours in the world. They are half way to India. We saw how the Suez Canal was blocked for several days very recently by the sinking of a dredger, and by the sinking of a few lighters, designedly or undesignedly, the whole Suez Canal transit could be stopped for a long period. Then English trade would go round the Cape, and then the possession of good harbours on that side of it would be everything. The future welfare of the Malagasy will depend upon their being acknowledged in Europe, in the same manner as the new Congo State is acknowledged as a free State by the Great European Powers. The free ports of Madagascar will then do a great deal to extend trade and promote the safety of English, American, and all other com-

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[1] Antananárivo is only about 70 miles as the crow flies direct to Andovoranto, 60 miles south of Tamatave. The native runners, stationed in rélays, manage to accomplish the journey to Tamatave in four days.

[2] Generals "Hazo" and "Tazo."

[3] The result of the elections in France has since justified this remark.—S. P. O.

mercial trade in the Indian Ocean. The harbour at Diego Suarez Bay is infinitely superior to anything you can find in Mauritius. Diego Suarez Bay is about halfway between the Cape and Ceylon, and I think we may look for the opening of several free ports there. You may *call* them Hova, but they must be under the protection of some European Power, and there is no doubt what that European Power will be, because it is the only European Power that has dominion of the sea in all the seas. With regard to the remarks of Mr. Shaw, who has experienced the contrasting mercies of the combatants on both sides in Madagascar, I have tried to point out in my paper that which I hope he will read in detail afterwards—the difference between the Hova and Malagasy warfare of olden days, and the warfare of the present time. It appears certain that lately the Hova military authorities have steadfastly set their faces against the savage, barbarous practices which were characteristic of their warfare in former days. Now, the Hovas conduct their wars—such wars as they have to carry out—with every knowledge of the canons of warfare as far as regards its civilization and amelioration. They acknowledge the ambulance and the Red Cross, and behave themselves like civilized nations. I do not know that they have always received the same consideration themselves, but there is no doubt that the change which has been effected is due to some of the gentlemen here this afternoon—Mr. Cousins, Mr. Kingdon, Mr. Shaw, and others—and to the example of some Englishmen who have lived a good life among the Hovas, and have induced them to give up their savage practices and conform themselves to modern ideas of warfare. War has been forced upon them by an invasion of their country, but it is not for me to pronounce on the rights or the wrongs of the quarrel, though I may say this, that the Hovas will yield to none in their merciful and humane procedure of warfare. Perhaps I may quote a few figures of Admiral Galiber, who was examined on a Committee last year by the French Government. He said that out of a force which the French had of 1,100 men of all services there were 30,658 days in hospital, that is, for a period of six months 690 men were invalided to Réunion. The cases of malarious fever amounted to 27 per cent.,[1] and, inclusive of those cases at the hospitals in Réunion, the total was 40 per cent. On the 12th February, 1884, there were 268 cases of fever in the force, which shows that with their present numbers the French have no chance of advancing into the interior. Of course, if they liked to send a large force there is no doubt that they could walk over the Hovas as they liked, but to keep a small force at Tamatave and Mojangà of 2,000 men with 12,000 surrounding them will be useless. Unless the French really mean to make a conquest and advance a large portion of men, it will be impossible for them to subdue the Hovas. Admiral Wilson wrote to me the other day, and he said he did not think that a force under 14,000 men could advance on the capital. Unless the French are absolutely determined to make up their mind to expend the amount of money required for an expedition of that size they had best retire. They may hold Mojangà and Tamatave and small ports on the coast for a certain time, but the Malagasy can afford to wait. I think that all civilized nations will join in hoping that the Hovas may be allowed to develop themselves into a nation. They have shown themselves capable of progress, though up to a few years ago they were a very cruel race. They are the only people who can make Madagascar a real country. If we tried to annex the island we should have to depend upon them to rule the interior, and we should also have to depend upon the natives to do our work as coolies. Unless the French make it a real French Colony, which seems to me impossible, they cannot hope to succeed. We can only trust that in future they will leave the Hovas alone.

The CHAIRMAN: I am sure, ladies and gentlemen, you will all join in giving a vote of thanks to Captain Oliver who has so kindly given the lecture, and imparted so much information to us to-day.

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[1] The French possess a delightful convalescent establishment at Salazia, some 3,000 feet above the sea in the island of Réunion.

Friday, July 3, 1885.

LIEUT.-GENERAL SIR FREDERICK W. FITZWYGRAM, BART., M.P. in the Chair.

THE PROVIDING OF REMOUNTS FOR OUR CAVALRY AND ARTILLERY.

By Colonel F. S. RUSSELL, the Royal Dragoons.

PERHAPS it might appear at first sight that the subject of this paper is one which is interesting to comparatively a small portion of the military Service—that it is almost purely a technical matter, affecting only two branches of the Service, and affecting them only in a minor degree—in fact, that it is to be studied perhaps by enthusiasts or specialists, but of such minor importance as to be of little moment to the public at large.

If this view be held by any of those present, or by any who may do me the honour to read my remarks, when they are published at some future time, I venture to say that I consider it to be entirely mistaken.

I can remember when it was the fashion, not very long ago, to decry the mounted service entirely, and to declare boldly that the day of cavalry was gone never to return.

When I first entered the Army, about twenty-two years ago, it was my good fortune to go through a school of musketry. In those days breech-loaders had not been introduced, the Enfield rifle was the arm, and so marvellous a weapon was it then considered, that I have a vivid recollection of an enthusiastic instructor addressing the squad of cavalry Officers sent there for instruction, myself among the number, and explaining to us with the greatest accuracy, and, I may add, considerable pity for our fate, that if we ventured to charge infantry, so perfect now was their weapon, and so accurate would be their shooting from the new system of musketry instruction, we must be inevitably killed at least about five times before we could get near them; and hence, if we ever wished to be useful soldiers, the sooner we got rid of our spurs and took to our feet the better.

Since the introduction of breech-loaders, the calculation, I am told, makes our fate even worse; we should inevitably be killed fifteen times; but still, strange to say, the cavalry service exists, and, I may add, still retains the consideration and respect of all those who have

studied the art of war most deeply. The Great Powers of Europe, so far from reducing their cavalry, have not only materially increased it, but also keep it in a constant state of perfect readiness for war. After every recent European campaign, each of the Great Powers have paid redoubled attention to the very point which I shall attempt to bring to your notice to-day, namely, the necessity of having a supply of good and serviceable horses ready and available for use at any moment. They hold that an army in the field, no matter how well equipped or formidable otherwise, unless it has a powerful and efficient cavalry, is like a short-sighted man who has left his glasses behind him, like one whose eyes are blindfolded, trying to fight another whose eyes are free. In fact, that no army can hope to achieve any important success in a campaign, still less to reap the fruits of victory, unless its cavalry be numerous, efficiently trained, well led, and well mounted.

What is true as regards cavalry is, if possible, still more true as regards artillery. The scientific improvements in field guns have given an enormous increase of power and importance to artillery in action, in fact, it has been stated that battles in the future between two civilized Powers, in the first phases of the combat, will be little else than an artillery duel. Where weapons are fairly equal, and it is reasonable to suppose that in future European wars they will be to all intents and purposes equal—that artillery will be the most efficient which has the greatest mobility, and great mobility can only be obtained by good horses.

Very likely there are comparatively few who realize the number of horses which an Army Corps requires when it is put on a war footing. I will not speak of the draught and transport horses, which need not be necessarily of a very superior class, and hence might possibly be procured at short notice without much trouble, although, let me remark, not without great expense. I refer to superior horses, such as cannot be bought in a hurry, and which must be superior as they have to carry valuable men, and hence are responsible for valuable lives. For one Army Corps no fewer than 3,144 horses are needed for the cavalry alone; and for the horse artillery and field batteries no fewer than 2,987. To put our cavalry on a war footing at the present time about 5,020[1] would be required. Colonel Keith Fraser, who formerly commanded the 1st Life Guards, and is now our Military Attaché at Vienna, in an article published in the "Fortnightly Review" in October last, calculated the number of cavalry horses in the United Kingdom at that time as 4,325. This number is now rather over than under the mark, and, deducting 30 per cent. for the animals either too old or too young for active service and the usual casualties, he comes to the conclusion that "it would at present be barely possible to supply a sufficiency of horses for one such corps." I confess that I see no ground whatever for questioning his calculations, which seem to be not only disquieting, but absolutely alarming.

Perhaps it might be imagined that this great country with all its

[1] 4,184 saddle, 836 transport.

riches and its own excellent breed of horses could, without trouble, at a few days' notice, mount its cavalry and artillery, in fact, that it would be merely a case of money, and that the necessary supply would be found, if not in these islands certainly elsewhere. Permit me to say, if there be any who cherish such ideas, that they commit a fatal error. One of the first acts of the Continental Powers on the outbreak of a war would be to prohibit the export of horses. Hence we should be forced to fall back on our own resources. Unfortunately we have not in England the powers possessed by foreign States of utilizing every horse in their dominions. We cannot requisition or order forced sales; and, moreover, we have no machinery for registering the position and the quality of the horses that we actually possess. As remarked in an able article on the remount system of the German Army in the "Revue Militaire de l'Étranger," it is just as necessary to be assured of the quality of the horses as it is of their number. Remounts to be immediately effective must be trained, and not only must they be trained but such as to inspire confidence in the men who ride them; far better be without a horse than be obliged to ride a broken-down brute, whose forelegs imperil one's neck, and who would certainly fail one in the moment of danger.

It is, I think, acknowledged that at the present time the system on which remounts are supplied to our mounted Services is by no means satisfactory, or, at least, that it is capable of great improvement. I therefore propose to review shortly the various methods adopted by other Great Powers, and then to consider how far it would be possible to modify or alter our own with a view of being better able to supply the requirements of modern war.

The German System.

I will first speak of Germany, as in all matters connected with their Army the Germans have devoted an infinity of trouble and thought to their remount system, and it seems that much can be learnt from its study. This is not surprising when one considers that to mobilize the cavalry of the German Empire no fewer than 111,744 horses are required. They regard "the remount question," if one may thus term it, as a matter of national and not purely military importance, since it affects agriculture and industry almost as much as it does the Army, hence for many years past, in fact since 1825, they have laboured in Prussia to make themselves entirely independent of all foreign countries as regards horses, and have endeavoured to effect this not only by increasing the number of horses in the country, but by improving their breed. They have been thoroughly successful as regards both these points. Germany is now quite independent of its neighbours as regards the supply of horses for the Army, and the experiences of recent wars have proved most clearly that of all the various breeds of Continental horses that have been tried in a campaign, the remounts that came from Prussia proper were the most enduring and the best.

It may be rather curious to relate the opinion held of the qualities

of the various descriptions of horses that were used in the 1870 campaign, as expressed by the Officers who served in it. These are embodied in the report of Lieutenant-Colonel von Brozowski, who commanded the 1st Regiment of the Dragoons of the Guard, dated August, 1871.

1. The best animals, it is stated, were remounts coming from Prussia proper, between the ages of seven and eleven years, and their endurance varied in direct proportion to their breeding. The better bred they were, the more able were they to stand fatigue.

2. The horses that were bought in the open market, or requisitioned when the mobilization took place, were found to be very inferior to the ordinary remounts: in fact only those of seven years old and already broken were of any use.

3. The horses captured from the French cavalry were generally found hardy and serviceable, but they were clumsy, underbred, and awkward compared with the horses of the Prussian cavalry. It is added that far the best were the Arab stallions, but these were, as a rule, irregular in their paces, inclined to stumble, and were too small in size to carry satisfactorily a cavalry soldier.

4. It is stated that the worst horses of all were those requisitioned in France, the greater part of which came from Normandy, where the breed is the reverse of hardy, and is unable to stand fatigue. The Norman horses, however, that had a mixture of English blood were found far more serviceable.

Various other reports from different Officers after both the 1866 and 1870 campaigns tend in every way to prove the superiority of the North Prussian breed over every other class of Continental horse. Not only do these reports emanate from North Germans themselves, but they are fully confirmed by Officers of other nationalities, both those who fought under the Prussian flag and those who were ranged against it. This superiority is no doubt partly attributable to the climate and soil, but still more to the very great care which has been taken by the Government to improve the breed. Gradually as the Prussian breeding system is established all over Germany, and the stock of well-bred sires come to maturity, we may expect to find a great improvement in the stamp of horses throughout the entire Empire, more especially in the south, where now it is notoriously inferior.

In the early part of the century the remounts for the Prussian cavalry were as a rule imported from foreign countries, more especially from Poland. It soon became evident that there were most serious and fatal objections to this practice. In the first place, as even in those days about 1,500 remounts were required annually, a very large sum of money left the country and went entirely to encourage foreign industry, in addition to which the expense of bringing these young horses from other localities was by no means inconsiderable. Secondly, no encouragement whatever was given to breeders at home, and as a result the breeding of good horses almost entirely ceased. Lastly, in the event of war Prussia was entirely dependent for the efficiency of her Army on her neighbours, and if their markets were closed, serious

embarrassments must result. It was therefore most wisely decided to strain every effort to encourage farmers to breed horses in Prussia itself, and gradually to limit importation to such animals as were required to improve the breed, that is, to well-bred stallions and selected mares. It was, however, soon found that the State could not itself become a breeder with either economy or success. Studs, it is true, had existed in Prussia since the commencement of the seventeenth century, but these were intended solely to supply the private stable of the King, or for the general purpose of improving the blood of the horses throughout the country; in this latter object they were extremely successful, and when in 1815, after the great war, they finally decided to trust to indigenous resources, it was found that there were a considerable number of excellent horses in the Prussian dominions, though not enough to provide the entire Army with remounts. Year by year, however, the imported horses decreased in number from 1,000 in 1821 to 144 in 1827, till finally in 1828 it was found possible to dispense entirely with all assistance from foreign countries. The only question now to be decided was how these animals might be best and most cheaply utilized for the service of the State.

It was found by no means easy to reconcile all the different requirements to effect this object. Of course it was important that economy should be studied, and that for every thaler expended, the State should have its thaler's worth—a principle from which there is no deviation in any matter connected with the administration of Prussia. In the next place the horses supplied for the Army must be good in quality, sound, without blemishes, and must be fit for immediate service, that is, at least five years old. It was found utterly impossible to obtain such an animal from the farmer of the country at anything like a reasonable rate; in point of fact sound horses without blemishes could not be procured at all unless they were bought at three years. No farmer could afford to keep a horse unworked until it was five; he must either sell it or use it for farm purposes. In the former case the animal very probably went out of the country, or under any circumstances fell into private hands, and was hence lost to the State; in the latter case it was almost certainly blemished or spoilt either as regards its paces or its manners, and thus rendered unsuitable for the cavalry service. Great, however, as was the importance of economy, more especially in a country with so many military requirements and so few material resources as Prussia, still the efficiency of the Army was the all-important object, and this could not be sacrificed for any other consideration; consequently the idea of purchasing horses at the age of three years and drafting them to regiments at once could not be seriously entertained. Cavalry Officers who have had practical experience of this system will require no explanation of serious drawbacks as regards efficiency with which it is attended. I shall, however, have occasion later on to point out how a regiment is crippled by the presence of young horses, which for two years after they are placed on the establishment are wholly unfit to take the field. Suffice to say that the practice of drafting remounts to regiments immediately on their

purchase having been tried in Prussia for about six years, that is from 1815 to 1821, was found to be the worst possible economy, and in the latter years was finally abandoned. Since that date there have been remount depôts, which have gradually increased in size, number, and importance, until now they are able to provide horses for the cavalry of the entire German Army. It must not be supposed that these are breeding depôts; as before mentioned, it was at once seen that the State could not for one moment hope, as regards breeding, to compete with farmers on favourable terms, nor even, if it could do so, would such a competition be in any way advantageous for the country at large. These depôts are solely intended for the rearing and partial training of remounts during the time which intervenes between their purchase at three and a half years or thereabouts and their arrival at sufficient maturity to be placed in the ranks.

Before, however, explaining the constitution of these depôts, it is but right to state that the German Government, although most wisely abstaining from breeding itself on any large scale, gives to farmers every possible State assistance to enable them to do so, and by no means relaxes the efforts which it found necessary in its earlier days to maintain and improve throughout the entire Empire the class of animal best suited for military purposes. In England we can afford to dispense, or at least have hitherto dispensed, with all such extraneous aid; our racing and hunting tastes have been a sufficient stimulus to private enterprise, and it is, I think, an acknowledged fact that the breed of English horses has improved gradually but sensibly, both in size and quality, though, alas! not in soundness, for many years past.

In Prussia, however, it is very different, and, had there been no action on the part of the State, we may rest assured that the breed of horses would have deteriorated just as much as it has in Italy and in several other parts of Europe. The means adopted by the Prussian Government to encourage breeding might be summarized as follows:

1. By the establishment of three main breeding studs, originally intended to supply the Royal stables, but now principally devoted to the production of covering stallions, which are distributed to minor studs in country districts.

2. By the establishment of fifteen country studs, which supply covering stallions for country mares.

3. By giving prizes to private stallions that have been duly examined and declared qualified by Government inspectors; the sum annually granted for this purpose amounts to about 1,900*l.*

4. By State assistance in the shape of loans to private companies and associations for the purpose of buying good breeding stock. It must, however, be added that the amount given in this way is very small; a few years ago it was under 250*l.*

5. By prizes to be run for at race meetings, amounting in all to about 8,000*l.* annually.

6. By money grants to parishes for the maintenance of pasture lands on which young horses can be grazed. Here again these grants are so insignificant as to be almost nominal.

As will be seen, breeding is principally stimulated by the three main studs, which are of long standing. The first, at Trakehnen, in East Prussia, was established so long ago as 1732 by Frederick William the First, and has served as the model for all the others. The second was formed by Frederick William the Second at Neustadt, on the Dosee, in the Mark Brandenburgh, in 1788; and the third, at Gradlitz, near Torgau, was created in 1875, when the Duchy of Saxony was joined to Prussia. These Royal studs are the feeders of all the minor ones, of which at present, as before mentioned, there are fifteen, three having been added within the last few years. By means of these studs about 2,000 covering stallions are distributed throughout the country, and at the proper season serve country mares at an almost nominal rate. Thus the Government take the fullest precautions that none but good and healthy sires are permitted to perpetuate their race; they also avoid the expense and trouble of breeding themselves, and while they can reject the bad, they have the first claim on all the best stock throughout the Empire.

The Method of Purchasing Remounts.

Having endeavoured to explain the means taken to insure the existence of a proper supply of good horses in Germany, I will now proceed to state how they are procured for the service of the State. The remount officials form a distinct and separate department of the Ministry at War, and are under the command of a senior cavalry Officer, who has the title of the Inspector-General of Remounts. The country is divided into six zones, each of which is under the charge of a Commission, who are detailed to purchase all the horses for the military service in that district. At the head of each of these commissions there is an Officer of cavalry, who holds the position permanently, and whose rank may vary from Colonel to that of Captain. When not employed on their tours for the purchase of horses, the presidents of commissions are engaged in office work at the Ministry of War at Berlin. The other members of each commission are not named until just before the time arrives for buying the remounts, and consist of two Lieutenants and a Veterinary Surgeon, who are selected from the regiments quartered in the district to which the commission in question belongs. It is stated that as a rule there is little change in the presidents of the remount commissions, and not unfrequently they receive the appointment at the rank of Captain and retain it almost until they become Generals. It is felt that the knowledge of horses, especially of young horses, is a gift in itself, and possessed by comparatively few men, and that the valuable experience gained in a few years during the performance of remount duties would be turned to the best account by retaining the Officers who have gained it as long as possible in their office.

The commissions commence their tours for the purchase of horses in the month of May, and finish them about the end of September; before entering any locality they previously advertise the times of their arrival and the dates when the fairs will be held where remounts are

to be bought. To each of these fairs they are accompanied by some men drawn from cavalry regiments quartered in the neighbourhood, who after the purchases are made take the animals off to the nearest remount depôt, where they are numbered and provisionally alloted to that branch of the Service for which they appear to be most suited. As a rule horses are purchased between the ages of three and four years, and their prices vary according to what appears to be their value in the opinion of the commission. From the last report available of the operations of these commissions it appears that in the year 1882, 17,508 horses were examined by them, but only 7,902 were found to be fitted for the military service, and of these about 850 were afterwards rejected, 120 for bad sight, 435 from being too small, and about 300 because their owners asked more money than it was considered that the animals were worth. I give these details to show the great care with which horses are selected for the German Army, and also what immense advantages the Germans possess as regards the field for selection. The price of the remounts bought varied from about 15*l.* to about 65*l.*, the average being about 35*l.* per horse, which, considering that with the exception of 440 five-year-olds, bought as draught horses for the artillery, all were between the age of three and four, seems a very liberal price. It must also be remarked that in Germany there is no middleman or dealer to exact a profit for his own pocket on each horse purchased.

The Germans likewise adopt the wise principle of paying a high or low price according as the article they require is worth the money or not. In place of giving one price for every remount, quite irrespective of the service for which it is required, as unfortunately is our system, they are willing to give very high prices for animals that are worth the money. For instance, the average price of horses bought for the cavalry school ran as high as 55*l.*, and as good draught animals are extremely scarce in that country, as much as 46*l.* had on an average to be given for artillery remounts. Those who have seen the German artillery and compared their horses with those of the same service in the English Army, for which a considerably lower price is given, will appreciate our good fortune in possessing in this country such superior breeds for carriage and draught purposes. It is much to be lamented that in the opinion of all the best judges these animals are daily becoming scarcer, and are being supplanted by others of more breeding perhaps, but of far less substance and of inferior soundness.

It will be seen from the figures which I have just given that the German Army requires annually over 7,000 remounts; of these about 800 are required for Cuirassiers, 1,800 for Uhlans or medium cavalry, 3,200 for light cavalry, that is dragoons and hussars, and nearly 1,200 for artillery, of which about 800 are used for draught, and 400 for saddle purposes. Perhaps it may be interesting to mention the minimum height required for each service, and also what a few years since was found to be the average height as stated in a report of General Sir Beauchamp Walker, formerly our Military Attaché in Berlin.[1]

[1] *Vide* Appendix A.

I may state, so far as my own experience and observations go, and I know that my opinion is shared by many other Officers who have had excellent opportunities of studying the German Army, that the heavy cavalry horses are by no means so serviceable or so good as those on which the medium and light cavalry are mounted. The Cuirassier horses, although they show a very high standard of height, are frequently long-legged and by no means strong or really up to much weight, in fact lower and more compact animals would be far more serviceable. I remember once at the German manœuvres seeing about thirty Cuirassiers dismounted after a charge, their horses apparently had fallen from sheer exhaustion, and in many cases were wholly unable to rise. I believe that such an occurrence among the Uhlans and light cavalry is very rare indeed.

Having explained the system adopted for the purchase of horses in Germany, I will now go on to state what happens to them until the time comes when they are drafted into the various services for which they have been provisionally destined by the remount commissions.

The Remount Depôts.

As before mentioned, there are at present fifteen remount depôts in Germany, and these are so full that in all probability they will shortly be augmented. The number of horses kept in them seems to increase with great rapidity, which fact is the best possible proof that the system is found to answer. Thus we find that whereas in 1866 there were only 4,185 horses at these depôts, in 1876 there were 6,832, and in 1884 the number was fixed at 7,070.[1]

The Constitution and Management of the Remount Depôts.

As the system of remount depôts is the special feature in the German system which, I believe, might with advantage be adopted in this country, I think it may be interesting to say a few words regarding the manner in which these institutions are managed. Each remount depôt is practically a stud farm comprising a variety of paddocks and fields, which are used for the double purpose of rearing young horses and of growing the corn on which they are fed. Although all these farms are under the Minister at War, at the head of each separate depôt there is a civilian, who is called the Administrator, and who is selected on account of his knowledge of farming, his knowledge of horses, and of his general efficiency in all business matters.

This functionary is assisted by bailiffs, who vary in number according to the number and size of the farms attached to the depôt, and who are old soldiers qualified to hold civil employment, and generally hold these places for life. These men have charge of the labourers who work on the farms, and in fact they perform all the duties usually carried out by an ordinary farm-bailiff in England.

[1] *Vide* Appendix A.

The young horses, on the other hand, are under an entirely distinct management. To each of the remount depôts, according to its size and importance, is attached one (or more) military veterinary surgeons, who have the sole care of the remounts as regards their stable management and training. Under these veterinary surgeons are stud grooms, who superintend the feeding and look after the stable helpers—it is stated that the latter are provided only in the proportion of one to about twenty horses. These stud grooms are, as a rule, old non-commissioned officers of cavalry, who wear uniform and have homes provided for themselves and their families, as well as schools for their children.

Having endeavoured to explain the constitution of the depôts, it now only remains to say a few words regarding the manner in which the young horses in them are treated. These animals are received at the depôts about the age of three years to three and a-half years, and remain there one or two years, according to their development and general fitness for the ranks,—those only that are most backward are retained at the depôts for a second year. It is found, as a rule, that the larger and heavier horses come to maturity somewhat later than their better bred and lighter brethren. Hence the Prussian regulations lay down that the horses of the heavy cavalry and artillery of the guard are not to be taken into the service until they have attained the age of five and a-half years, the artillery of the line are to be given, when possible, only horses of the same age, while the light and medium cavalry might have horses of four and a-half years. Practically, however, throughout the German Army, no horses whatsoever are subjected to any severe work, such as manœuvres or the training of recruits, until they are between five and six years old.

At some of the depôts the horses are, as a rule, kept in the stable, while in others they are kept partly in the stable and partly in the paddocks, being allowed to run backwards and forwards from one to the other; of course sick or delicate horses are treated according to their requirements. The average daily ration per horse is stated to be 3 kilogrammes of oats, 5 of hay and 6 of straw, which to our ideas, more especially as regards the corn, seem somewhat scanty. The most detailed accounts are published regarding the expenses of these remount depôts, and elaborate calculations are made as to the cost of the keep of each horse. Into these details, however, I do not propose to enter, suffice to say, the depôts that have been established longest, are found to be by far the most economical, and that on the whole, taking into account all the collateral and incidental expenses, 12*l.* 10*s.* a head is laid down as the annual cost of a horse at the remount depôts.

I will now in conclusion of the German remount system summarize its main features. These are as follows:—

1. The encouragement of horse-breeding generally by the distribution of good stallions throughout the country.

2. The purchase of remounts yearly from May till September, at the age of three to three and a-half years by commissions of specially selected Officers.

3. The retention of young horses at stud farms from the time of purchase until they are fit to be sent to their regiments.

These are the leading principles, but there are one or two points to which I should wish to refer before passing on to the methods in force among other nations. As before mentioned, efficiency is the first, and economy only the second, consideration in all matters connected with the German Army, hence under no circumstance is a reduction allowed in the effective strength of any corps, as this strength is laid down in the regulations. In fact care is taken that each regiment and battery as regards horses should be in excess of its establishment rather than under it. For this reason if any animals are permanently disabled, are found to be useless, or during their two years' training develop peculiarities of pace, constitution, or temperament, which render them unsuitable for the military services, authority is given for their immediate sale, and their places are supplied by the purchase of seasoned horses in the open market from a fund set apart in each regiment for that purpose. Every use is also made with a similar object of those animals which, although they are drafted from the regiment to make room for the 10 per cent. of remounts allowed annually, are still practically serviceable for military purposes.

These animals are utilized in the following manner:—1. By mounting the one-year volunteers, who in return for the privilege of having their term of service shortened, are called upon to feed and keep the animal they ride. In this manner these young soldiers obtain seasoned animals without expense, and there is no additional cost to the State. 2. By having what are known by the name of "Krümperpferde." Each year when the remounts arrive at a regiment, which they invariably do at the same season,—a certain number of the most efficient horses are selected from the animals that have to be drafted, in the following proportions:—

4 for each squadron.
4 for each battery of horse artillery.
3 for each field battery.
5 for each company.

These are termed "Krümperpferde;" they are supernumerary to the establishment, and no rations being drawn for them, they are fed from the general forage issued for the other horses. The duties they perform are most varied and useful, such as transport work, that is drawing Officers' baggage, provisions, ammunition, &c., they also are used as riding horses by veterinary surgeons and others, for whom, usually, chargers are not provided. 3. The horses drafted are, when fit for service, also passed on to the mounted police, and are utilized in other ways as seems best suited to their age and general capabilities.

In conclusion, therefore, when we consider that each unit of the German mounted service is strictly maintained thoroughly effective at its peace establishment, which compared to the other arms of the service is inordinately high; and that, further, the Government

possess in Germany means, which we do not possess, of utilizing, at a few days' notice, all the best horses in the country; when we compare this state of things with the conditions that exist in our country, we cannot, I think, help feeling that as the most economical and practical people in Europe as regards soldiering deem the expense they incur necessary, a change in our system is not only advisable from a military point of view, but should recommend itself seriously to the consideration of the British taxpayer.

I will now endeavour to give a short account of the manner in which the other great Powers mount their armies, and to consider whether there is anything in their various systems which might with advantage be applied to this country.

The Remount System in France.

I will first speak of France: there, as elsewhere stated, breeding studs have been tried and abandoned, hence the Government has to depend almost entirely on the animals which can be purchased in the open market. Considerable encouragement and assistance, however, are given to private enterprise in the matter of breeding, by means of about 2,000 stallions, which are kept by the State, distributed throughout the country, and cover at a nominal rate. 60,000*l.* is voted annually for the maintenance of these animals, and although, from all accounts, there might be much improvement in their quality, there is no doubt that they are of much use to the farmers and of great benefit to the country at large.

As regards the purchase of remounts, it has been found in France, as in Germany, that if the Government wait to buy remounts until they are old enough to be put in the ranks, they lose all the best horses. Hence it has been found necessary to establish stud farms, where the young horses are kept in the interval between the time of their purchase and their reaching that age when they are capable of being worked without detriment to their future soundness and efficiency.

For remount purposes, France is divided into four circumscriptions, namely, Normandy, the West, the South, and the East—these are again subdivided into seventeen remount depôts, the names of which it seems unnecessary to enumerate. Algeria is also divided into three circumscriptions, one for each province, and in each province there is a remount depôt. The purchase of horses is carried out, as in Germany, by means of a commission, one for each circumscription. These commissions have at their head an Officer of the rank of Colonel or Lieutenant-Colonel, except in Algeria, where a Colonel superintends the entire remount establishments of the colony, the depôts being commanded by *chefs d'escadron*. These officers also make dispositions connected with the stallions and generally superintend all the breeding arrangements in the districts of which they have charge. As a rule about 13,000 horses are purchased annually for military purposes in France, the age being four years, but these animals are not worked

until the completion of their fifth or the commencement of their sixth year.[1]

It cannot be said that the remount system, as it now exists in France, is in any way so perfect as that which has been elaborated throughout such a succession of years in Germany, nor, so far as the opinion of the best judges can be trusted, are the horses in the French Army equal in quality to our own, or to those of several other European nations. Nevertheless, the French Ministry at War, whilst doing all in their power to improve the breed, as before mentioned, by good stallions, by prizes for races, for private societies, &c., is fully alive to the immediate necessity of having a large number of trained horses ready at the shortest possible notice to take the field. At the present time about 62,000 cavalry horses are during peace maintained by the State in France, and in addition to the usual peace establishment of batteries, no fewer than 15,000 artillery horses are lent to farmers gratis, and can be called up at any moment. In addition to this precaution, a census is taken annually, in the beginning of January, of all horses six years old and upwards, and of all mules four years old and upwards. These animals are all classified, according to the usual system adopted with remounts, by a mixed committee appointed by the General commanding the district, and the exemptions from military service, granted to certain owners, are extremely rare. When mobilization is ordered, the owners of the horses registered are bound to produce them properly shod, with a bridle or halter, at the places appointed by the mayor in each commune. Lots are then drawn, the horses required are selected, and distributed according to their capabilities and to the requirements of the State, while the owners receive payment according to a price fixed previously in each annual budget, which price is increased 25 per cent. in the case of riding and draught artillery horses. It may be added that the fines imposed on those who fail to produce their horses for classification are extremely heavy.

It will be thus seen that so far as the capabilities of the country go, in theory at least, throughout France, they are utilized to the utmost.

The Austrian Remount System.

I will now speak of Austria. The information which I have been able to obtain regarding the method of procuring remounts in this country is not so recent or so detailed and complete as I should have wished. I think, however, that I have as much as is required for our present purpose.

As in Germany and France, horse-breeding receives in Austria-Hungary direct assistance and encouragement from the State. In Austria proper there are two Government studs, and in Hungary there are now four, one in Transylvania having been recently added. The object of these studs,[2] most of which are of long standing, is to

[1] *Vide* Appendix B.

[2] Report of Colonel Goodenough, Military Attaché at Vienna, sent in to Lord Rosebery's Committee, dated April, 1873.

acclimatize foreign breeds, to raise mares for the use of the studs themselves, and also to breed stallions, which afterwards are distributed at Government stallion depôts for serving country mares. As a rule the various breeds are kept as far as possible separate and distinct, so as that in each district the horses which experience has shown are best suited to the soil and climate may alone be bred. The fee charged for Government stallions varies from 2*s.* to 10*s.*, and the Government have no claim whatever on the stock, which is the exclusive property of the breeder. Some idea may be obtained of the number of horses in the country when I mention that according to a census taken more than twelve years since in Hungary there were 2,158,000 horses, and in Austria 1,367,000; at the same time the Hungarian Government owned 1,786 country stallions, and the Austrian 1,600.

In addition to providing stallions the Government also takes other means for encouraging horse-breeding, such as by giving prizes to the owners of the best stock at the annual horse shows that are held in each district. The owners also of private stallions are subsidized by Government, provided the animals have been examined and approved of by Government inspectors for breeding purposes; in that case they have to be produced annually, and from 10*l.* to 30*l.* is paid to owners according to the class.

The Purchase of Remounts.

In consequence of the vast number of horses in its dominions, and the comparatively little trade which formerly took place in horse-flesh, the Government of Austria-Hungary until recently did not find that difficulty in buying seasoned horses for military purposes such as is experienced in other countries. The greater part of the remounts are purchased direct from the breeders or dealers at ages from four and a half to seven years, and sent straight to the service squadrons, where they are trained. The purchases are made by committees, of which in peace-time there are six for the entire Monarchy, a separate district being assigned to each. These committees are composed of a Field Officer as president, another Officer and a veterinary surgeon as members; these hold their positions permanently, and when not travelling about to fairs, ordinarily reside at a certain place, which is named as the headquarters of their district. They buy for all branches of the Service, with a special regard to the purpose for which the remount is destined, the average price throughout being a few years since so low as 250 florins, or 25*l.* Colonels of cavalry can also buy horses for their regiments, if they come across them, but they are not authorized to travel about to fairs.

These arrangements were universal until very recently, and still hold good throughout the greater portion of the Austrian Empire. It has, however, been found that the difficulty in purchasing sound horses of a seasoned age has recently become so great that the Austrian Ministry of War have at last been compelled to commence the system of remount depôts long since adopted in Germany and

France. In 1879 a depôt was established at Piber, in Bohemia; in 1881 another was formed at Billak, near Bistriz, in Transylvania; and a third has just been started in Hungary. These depôts are intended to hold 400 horses each; remounts are to be bought at about the age of three years, are to be kept for two years at the depôts, and are to be drafted to the regiments when they are five. As it is calculated that 5,000 remounts are required annually for the Austrian Army, twenty-five depôts each with 400 horses, and supplying 200 annually, will be required to perfect this system, which probably, from want of money, will not come into full play for some years to come. The average price to be paid for these remounts in the first instance is to be 225 florins, or 22*l.* 10*s.*, and their ration daily is to be about 8 lbs. of oats and 10 lbs. of hay. It would, perhaps, appear that this is a large average ration for such young animals; it is, however, specially stated that the main object in establishing these depôts is to feed young horses better than poor farmers have it in their power to do. It is thus most justly considered that by this means a better grown and far more serviceable animal will be obtained than by purchase in the open market of seasoned but underfed horses. It is further stated that the price of horses has recently risen so much, that animals which a few years ago could be easily bought for 225 florins, or 22*l.* 10*s.*, are now quite unprocurable at 550 florins, or 55*l.* It is thus hoped that eventually these depôts, although the annual expense of each is calculated at 50,000 florins, or 5,000*l.* a year, will practically be an economy; the great difficulty with a poor exchequer like that of Austria-Hungary is to find money to start them.

As since 1866 all the Austrian cavalry has been assimilated, the distinctions between heavy, medium, and light cavalry being abolished, special regulations have been introduced to make certain that heavy men are properly mounted. It is laid down that remounts must be of full age, that two-fifths of those bought are to be from 15·2 to 15·3 hands in height, or over, and the remainder from 14·3, which is the minimum, to 15·1. It may be remarked that as a rule the Austrian and Hungarian are somewhat lower in height than the English breed; 12 per cent. of the total strength is allowed annually as the maximum of remounts. Subaltern Officers and cadets are allowed troop horses, but Field Officers, Captains, and one-year volunteers serving at their own expense have to provide their own chargers, which can be bought at a very cheap rate. I may mention that although 25*l.* is the average price of ordinary remounts, 35*l.*—32*l.* are given for artillery horses.

The Means taken to insure an adequate Supply of Horses in Case of War.

As with other Continental nations, steps have been taken to ensure on an emergency a certain and immediate supply of good horses for the ranks by registering every horse in the Empire, and by giving the Government power to take possession of those animals which it deems suitable to its purpose. With this object the whole country is divided in levying districts, in which each year a census of horses

is taken; this is forwarded on to the Central Government. According to this Return, the authorities determine the amount of animals that each district has to furnish in the event of mobilization. When the order is given to mobilize, the owners have to bring in their horses to the levying centres, of which there are one or more in each district. Here a commission sits, which is composed of the prefect of the district or his deputy, an Officer of the army, and a veterinary surgeon. These decide what horses are fit for service, and employ sworn valuers, experts, to pronounce on the normal value of the horse. So far as can be done all requirements in horses are filled up by voluntary purchases, a sum being given which is slightly in advance of the remount price; in the event, however, of there still being a deficiency, horses are compulsorily drafted into the service, commencing with those of the lowest value and so on; by this means it is computed that all the requirements of the army could be completed within four or five days after the order had been given for mobilization.

Before quitting the subject of the Austrian remount system, I must allude to the arrangements which are made for creating a first reserve of horses in the Hungarian Landwehr or reserve cavalry. I speak from a report which was laid before Lord Rosebery's Committee in 1873, by Lieutenant-Colonel, now Major-General, Goodenough, our Military Attaché at Vienna at that time; very possibly since that date there may be some further alteration and improvements. According to this report only 30 horses per squadron are kept during peace-time at headquarters—but there is an effective strength of 150 horses immediately available for service. Each squadron purchases and keeps its full number of horses on its books; after their first training these remounts, which can be spared over and above the thirty to be detained, are lent to farmers, who agree to take care of them in return for the right to use them, subject to producing them for inspection, or handing them over for the temporary use of the squadrons at the annual manœuvres. After keeping them a limited number of years, the horses become the property of the farmer who has kept them. General Goodenough adds that this system has only been in force during the three or four years that the reserves had then been in existence, but he believes that it is working well.

I daresay it will be remembered that in the autumn of 1879, an experiment was made in this country by the importation of 350 Hungarian horses, the 3rd Hussars being mounted on them when the regiment returned from India. So far as I can learn, the experiment was not on the whole considered a success, the Hungarian horses themselves, although hardy and serviceable, were undersized, very few being over 15·1 and some under 15 hands high, and were not considered equal to our English remounts, while the additional expense of their carriage counterbalanced the saving effected in their original price; in fact, they were landed in England at 40*l.* a-piece. A troop of these horses were drafted to the 7th Hussars when that regiment went out to South Africa for the Boer war in February,

1880, and were on the hired transport of which I was in military command; all that I can say is that their conduct on board ship was most exemplary. They seemed to be of a very quiet and tranquil disposition, and subsequently the late Colonel Burnell, who then commanded the 7th Hussars, told me at Durban, Natal, that the Hungarians kept their condition better than the English horses, and seemed to be more equable in temperament and more hardy. About 100 also have been recently employed with the 19th Hussars in Egypt with satisfactory results.

The Russian Remount System.

I will say a few words regarding the remount system adopted in Russia.

As in the case of Austria, the information which I have received regarding the remount system of the Russian Army is not so recent or detailed as I could have desired. This, however, is of comparatively little importance, as practically the resources of Russia in the matter of horses are so inexhaustible that but little system is required. In European Russia alone it is calculated that there are 20,000,000 of horses, whereas in the German and Austro-Hungarian Empires there are only between 3,000,000 and 4,000,000 a-piece; in France and Great Britain between 2,000,000 and 3,000,000, and in Italy about 500,000. Thus taking the proportion of horses to population we find that the following is the respective ratio:—

Russia has ..	235	to every 1,000	inhabitants.
Austria ..	100	,,	,,
France ..	80	,,	,,
Great Britain.	84	,,	,,
Italy	25	,,	,,

It must, however, be stated that the great proportion of horses in Russia are of a very inferior stamp, and are very deficient both in bone and in muscle; and also that from all accounts the Russian Government, in attempting to improve the breed of horses throughout the country, have fallen into serious error, and have bred a class of animals good as regards breeding, but most unserviceable. It is also stated that the emancipation of the serfs, by causing indirectly a great amount of poverty and distress, has affected injuriously the breeding of horses. In one district alone, that of the province of Tamboff, in 1865 there were only 89,500 horses against 713,143 in 1845.

The Purchase of Remounts.

As regards the purchase of remounts, these are bought by Officers specially told off by each regiment, usually in the districts where the regiments are quartered, and 9 per cent. of the establishment are allowed annually. It appears that in some instances Officers are given a lump sum, and are required to produce so many horses

annually, a system which is not calculated to improve the quality of the animals purchased.[1]

Government and Private Studs.

As before mentioned, efforts have been made by the Russian Government to improve the breed of horses, but these efforts from misdirection have not been crowned with complete success.

With this object various studs have been started, for which, in 1884, 95,000*l.* was voted, as compared with 93,000*l.* in 1883. From reports, however, made by an Officer who has visited these establishments, it would seem that whereas the breeding of Arab horses has been very successful, that of other races has been on the whole a failure. It is stated that there has been too little mixture of blood, too great a tendency to use thoroughbred breeds as stallions, and a too common tendency to in-and-in breeding, more especially as regards the Orloff breed, which for riding horses is about the most highly prized in the Russian dominions. There are, however, a large number of private studs through which horse-breeding is principally carried on. According to a very recent computation these studs are no less than 3,430 in number, and are possessed of 9,560 stallions.

As regards procuring horses quickly on an emergency, it may be well believed that with such large resources, and such autocratic power as, even in peace-time, is vested in the Russian Government, no difficulty whatever is experienced in obtaining any number of horses at the shortest notice for military purposes.

By a law passed in November, 1876, the details were laid down for a rapid mobilization, and in the spring of the following year, at the commencement of the war with Turkey, no fewer than 69,906 animals were required for the Russian Army. Of these 59,000 were parted with voluntarily, the remainder being requisitioned; it is also stated that while in 1876 there were 126,426 horses in the Russian Army, at the termination of the Russo-Turkish War they numbered 383,890. Except as regards the significant fact that even in Russia it has been found necessary to establish remount depôts for young horses, the conditions of the two countries are so different that it does not seem we can gain many hints in England from their remount system.

The Remount System of Italy.

It remains now to say a few words as regards Italy. In the Italian Peninsula horse-breeding has received until very recent years no encouragement whatsoever, nor do the peculiarities of the country or the tastes of the inhabitants in any way tend to favour the development of the mounted branches of the military Service. For the last three centuries, until the various small States were consolidated into one kingdom under the crown of Savoy, the breed of horses gradually and surely deteriorated, and for some time after the creation of a

[1] Vide Appendix C.

united Italy the Government had neither leisure nor money to devote to a matter of such comparative detail as the question of horses. As soon, however, as the patriotism of the Italians was kindled, and they saw the necessity of the creation of a powerful army if they wished to maintain their existence as an independent State, no time was lost in considering the question of horses, without which no army could take the field.

According to the last census there were 570,000 horses, 160,000 mules, and 370,000 donkeys in Italy. As the Army on mobilization would require 43,768 horses and 16,192 mules, it was calculated that, making allowance for the animals too old, too young, or too weak for military purposes, and those which it would be impossible to spare from the ordinary duties of life, it would be wholly impossible to place an Italian Army in the field without great assistance as regards horses from foreign countries.[1]

In former days there were excellent breeds of horses in Italy, more especially in Tuscany, in the Roman Campagna, in Calabria, in Sicily, and Sardinia; but the industry seems almost entirely to have died out, and statistics prove the utter carelessness of the population in all matters of horse-breeding. It is stated that no care whatever is taken in rearing foals, that they are worked far too young before they are properly developed, and that of 600 born only 100 fitted for the military Service reach the age of five years. Out of the horses brought up for purchase to the Remount Committees, as a rule all are rejected except about 5 per cent., and Italian Officers, as a rule, are entirely mounted on foreign horses.

The first step taken by the Italian Government was to establish remount depôts for rearing young animals after purchase—one was formed at Grosseto in Tuscany, the other at Persano in the district of Salerno. Also Government stud farms for improving the breed of horses were made at Ferrara, Santa Maria di Capua, Reggio, Pisa, Crema, and Catania; these were placed under the Minister of Agriculture.

It was soon found when the Army was augmented that two remount depôts were insufficient, and as soon as money is forthcoming others are being established throughout Italy; but in the meantime seasoned horses had to be bought for army purposes in the open market. The price usually given for young three-year-olds is 500 francs, or 20*l.*, these are kept for a year and a half and are then drafted to their regiments; the average price for seasoned horses is about 800 francs, or 32*l.* It may be added that the Italian Government to a limited extent adopt the same measures to improve the breed of horses as are common in other countries, that is, they have Government stallions which cover country mares at a very cheap rate; prizes also are given at race meetings, at fairs, and horse shows, and periodically good sires and well-bred mares are imported from other countries. No doubt, before many years have elapsed a great improvement will be visible

[1] For this information I am principally indebted to "Military Italy," by Charles Martel.

in the horses of the Italian kingdom, but at present those who have had the best opportunities of seeing their Army are fully agreed that we have no reason whatever to be envious of the quality of their horses; nor, indeed, is there any necessity for our devoting much attention to their remount system.

Having endeavoured to review the various methods adopted by the other Great Powers of Europe for providing remounts for their cavalry and artillery, it now remains for us in conclusion to consider our own. Before, however, doing so I must first mention the source from which I derive the greater part of my information, as well as the conclusions which I shall venture to deduce.

It probably will be remarked that immediately after the French and German War in 1870 the British public became impressed with the necessity, in the interest of the efficiency of its Army, of having autumn manœuvres on an extended scale. For several years these manœuvres were carried out with considerable vigour, which year by year became less and less pronounced until at last, I regret to state, important as they are acknowledged to be, they have practically become a thing of the past. One of the first results of these autumn manœuvres was to demonstrate the extreme difficulty of obtaining horses for military purposes, and to excite the alarm of the authorities, military and civilian alike, as to our position in this respect in the event of war. In consequence of this alarm a Select Committee of the House of Lords was formed in June, 1873, on the motion of Lord Rosebery, "to inquire into the condition of this country with regard to horses, and its capabilities of supplying any present or future demand for them."

The evidence given before this Committee was of a most voluminous and interesting description, the information elicited was most valuable, but the entire result of the evidence given, of the information elicited, and of the suggestions consequently made, has up to this time been absolutely *nil*. Although the Committee was almost entirely civilian in character, and was directed to report on the scarcity of horses generally, nevertheless it examined several distinguished Officers, and included the remount question within the scope of its inquiries. I cannot do better than recommend any of those who take an interest in this subject to study the Blue Book issued by the Committee.

I will now proceed to discuss our remount system as it exists at the present moment. According to the Army Estimates for the year 1885–86, the British establishment of horses is 13,552; allowing 10 per cent. as remounts, it will be seen that about 1,350 are required to keep up this number on its present peace footing. These horses are purchased in the following manner:—The Household Cavalry give 60*l.* for their remounts, which are exclusively black horses, and are purchased usually at $3\frac{1}{2}$ years old by the Colonels commanding the respective regiments. In the Cavalry of the Line 40*l.* apiece is given for remounts, these are purchased through the medium of dealers, also by the Officers commanding regiments. I may add that I

consider this sum now quite insufficient to obtain good heavy dragoon horses: 45*l.* is now given for transport animals that have far fewer requirements. In the Artillery 45*l.* is given for remounts, and these are bought all by one Officer, who at the present moment is Colonel Ravenhill, Royal Artillery, who, unfortunately, is prevented by his military duties from being present here to-day, but to whom I am indebted for much valuable information. As a rule, the annual castings take place after the autumn inspection; the cast horses are sold, and remounts are bought as soon as possible afterwards, almost simultaneously by all regiments at the autumn fairs. So far as I can gather at the present time, nearly all the horses for the Cavalry of the Line, and the greater proportion of the Artillery horses, are purchased in Ireland at the age of 3½ years old. The Household Cavalry obtain most of their horses in the North of England.

Unlike all the other Great Powers in Europe we have no remount depôt, but young horses are at once drafted to their regiments, where they are immediately trained, and as soon as possible are put into the ranks. As before mentioned, 10 per cent. is the maximum average allowed for casting, and this under ordinary circumstances includes every description of casualty.

It may be interesting to consider how we stand as regards our mounted services.[1]

It appears to me as regards the small amount of horses that we actually possess, and which figure on paper in the Army Estimates, that the system now in force is by no means the best calculated to promote efficiency, or in the end the most economical for the State. It has been found not only in this country, but, as has been shown, also in every other country of Europe, that it is wholly impossible to buy seasoned horses for army purposes. Unless remounts are bought between the ages of three and four they are lost to the State. Our system of dispensing with remount depôts, and drafting horses at once to regiments, seems a mistake, since it places us on the horns of a dilemma; either we work the young horses too soon, before they have been properly fed or arrived at their full strength, thereby materially injuring them, or else we keep them for two years before they take their full share of work in the ranks. The latter alternative is undoubtedly in the end the best and the most economical, but it thereby seriously impairs the efficiency of cavalry regiments. Practically a regiment of 400 horses has now seldom 300 fit to go on a campaign; 5 per cent. must be allowed for casualties, and 20 per cent. for remounts bought at three and a half years, and not yet arrived at maturity.

It also seems to me that by our present system of purchasing horses we do not turn our advantages to the best account. While making these remarks I must state that I do so purely in the interest of the Army at large. I regard the purchase of remounts as one of the most interesting duties which the Commanding Officer has to perform, and one which I am sure not one would relinquish without

[1] Vide Appendix D.

great regret. I cannot, however, but feel that the system is one which neither in theory nor in practice can be regarded as the best for the efficiency of the public service.

In fact, we have practically agents of the same Government bidding against each other at the same time in the same market, making use of a dealer or middleman, who levies a large profit on each horse. In the days when Colonels retained command of their regiments for eleven or twelve years the system would appear to be less objectionable. It is, I think, an acknowledged fact that a good judge of horses, more especially of young horses, is very rare. A man may be a first rate Commanding Officer, but may be entirely ignorant of the points of a horse; similarly a first rate judge of a horse may be utterly inefficient in the field. In former days if the Colonel of a regiment made mistakes in his first purchases he probably soon gained experience, and the errors he committed were probably counterbalanced by the additional interest he took in the young animals, which were bought, trained, and arrived at maturity under his own special care and direction.

Now, however, the case is very different, when the average command is limited to three, and very frequently does not exceed two years, a Colonel now has no time to gain experience, and almost as soon as the young horses that he has bought are fit for the ranks he has to bid them farewell, and to hand them over to another.

Lastly, as to our reserves in horses we have absolutely none. We have reserves of men, and to quote the words of a distinguished Officer who has more practical knowledge of the horse question than almost anyone now in England, in the event of war a large bounty, more pay, and better prospects will procure men, but neither love nor money will procure the horses, still less the trained and efficient horses that we require for our cavalry and artillery.

I will now attempt in the short time that remains to me to make a few suggestions: 1st, as to the manner in which it appears to me that the efficiency of our mounted services as they now stand may be improved; 2nd, as to how their wants may be supplied in case of war; 3rd, as to how reserves of horses suitable for the military service may be formed at small expense to the country.

In making suggestions regarding certain points, in which it appears to me that the present system of remounting our cavalry and artillery might be altered for the better, I must first say that I do so in entire deference to the opinion of the Officers of far more experience than myself, who have done me the honour to be present here to-day, more especially of the distinguished Officer who has kindly consented to preside. I make these remarks more with a view of calling attention to a most important subject, which I cannot but think in recent army reforms has been much neglected, and in hopes that the energy of our military reformers may be turned in this direction.

It is, I think, universally agreed by overwhelming testimony that remounts must be bought between the ages of three years and rising five—as a rule between the ages of three years and rising four. If the purchase be postponed until after the latter age, all the best horses

leave the country or fall into private hands, and are thus lost to the State. It seems to me absolutely essential that remount depôts or, in other words, stud farms should be established similar to those which have been found necessary by the other Great Powers. I am confident that it is just as false economy to keep young immature horses with regiments for a couple of years as it would be to keep boys of fifteen or sixteen on man's rations and on man's pay. Either the animals themselves are worked too young, broken down and ruined, or else the efficiency and effective strength of each regiment is much injured and reduced by the presence of remounts utterly useless in themselves, and taking the place of seasoned and efficient horses, on which our young cavalry soldiers should be trained and exercised. It appears to me that remounts should be bought between spring and the autumn of the year in which they become three years old—that they should be sent to remount depôts where they may be well fed and looked after, besides being backed and partially trained. That in the autumn of the year in which they are rising five, they should be allotted to the various services for which they are fitted, and that at the end of September or beginning of October they should be drafted simultaneously to the various corps. During the winter and spring months their training might be completed, and the following drill season, that is when they are five off, they should be fit for the ranks. In this manner cavalry regiments and batteries of artillery would be able, with the exception of accidental casualties, to put every available horse in the field, and would not be hampered by the presence in its ranks of immature and wholly inefficient animals. A better class also of remounts might be procured than can now be purchased, and they would have a chance of reaching maturity before being worked. Moreover, the Government would be saved the expense of keeping immature unseasoned horses on the same rations and with the same attendance as effective ones.

This proposal as to remount depôts is by no means a new one; it has been urged repeatedly by many distinguished cavalry Officers. The late Colonel Jenyns in his evidence before Lord Rosebery's Committee stated that he considered these depôts would prove a great economy to the State, and many other distinguished witnesses also urged their necessity. I think I need scarcely remind you that they have been adopted by every Great Power in Europe. Suggestions once or twice have been made as to the establishment of Government breeding studs. After very careful consideration of this point I think it may be universally agreed that such studs are impracticable. The State cannot compete with farmers in the breeding of horses, nor, indeed, breed at all, except at a ruinous expense.

Through the courtesy of the India Office I am indebted for valuable and complete information regarding the Government breeding studs which were tried in that country, but I do not propose to enter into the question of remounting our Indian Army, which is not within the scope of this paper; I will, however, venture to quote the conclusions at which the Committee appointed to inquire into the management of the studs arrived. The following is their report:—

"1. That the stud department is able to supply only 556 horses per annum to the Bengal Army.

"2. That the cost of these horses amounts to either 148*l.* or 219*l.* each, according to different modes of debiting expenditure to the department.

"3. That the Government studs have failed to produce any amelioration in the indigenous breed of horses.

"4. That Government interference in horse-breeding has completely paralyzed private enterprise."

I need scarcely say that Government breeding studs had to be abandoned in India, and if tried I am confident they would have to be abandoned in this country.

It appears, moreover, that the stud farms which I suggest would be valuable depôts for Government stallions, which, as in other European countries, might cover farmers' mares at a nominal rate. The Board of Trade statistics prove that the number of horses bred in the country is decreasing while the demand is increasing, and if we desire to retain our excellent breeds some such measure by Government is absolutely essential. I think that, as suggested by Lord Combermere, the money now given in Queen's plates, which is useless for the purpose for which they were originally intended, namely the improvement of the breed of horses, should be devoted to the purchase of Government stallions for the service of country mares.

I may further state that there could be no more favourable opportunity than the present for the acquisition by the Government of localities suitable for stud farms. Land in Ireland is almost unsaleable, and in England it is little better. Two or three stud farms might be bought in Ireland and the same number in England for but little money, and their establishment would I am sure tend much to increase the efficiency of our mounted service, and otherwise would be of great benefit to the State.

The Method of Purchasing.

With respect to the method of purchasing our remounts for cavalry of the Line, as before mentioned I cannot but think that our present system, which in former days was open to many grave objections, is now wholly indefensible. It would appear better to adopt for the entire Army the method now in force for the artillery, and which I am told works extremely well, namely, to place the whole department under one Officer, who might be called the Inspector-General of Remounts, under him to have purchasing Officers, to whom distinct districts might be assigned, and who might, as in Germany, be assisted by other Officers temporarily detailed for that purpose. These commissions might purchase from May till October, visiting all the country fairs, and very soon would be able to dispense entirely with the assistance of the middle-man or dealer, whose profit should go to the benefit of the Government by the purchase of a better class of horse. By this means there would result very soon another advantage —one would find at the remount depôts horses of a stamp sufficiently

good to mount the Officers, as is done in Germany and in all foreign countries. I consider it a great scandal that the Government should force Officers to keep horses and still take no steps to provide them with good animals at a reasonable rate. There has of recent years been much discussion regarding expense, more especially in cavalry regiments; it has even been suggested that those most admirable and economical institutions—Officers' messes—should be abolished; institutions, I may say, for which all foreigners profess their admiration, and which they are gradually introducing into their Armies. If economy is desired I say the Government should show the example, and not make it necessary for their Officers to buy indifferent horses at exorbitant prices from dealers in the open market, 150*l.* being a not unusual price asked for a raw unbroken four-year-old.

Before quitting the subject of purchasing horses I must call attention to the great improvements that have recently been made in the matter of both casting and buying in the cavalry. Formerly animals might almost die of old age in cavalry regiments, and one-fourth of the horses in the English Army were over fifteen years of age, a convincing proof either of unsatisfactory method in which remounts must have been purchased or of the evil effects of working immature animals, which necessitates the casting of so many comparatively young horses. Now, in the regiments of the Ist Army Corps, horses over fifteen years of age are drafted at once; it is recognized to be just as false economy to retain in the ranks animals unfit to go on a campaign as it would be to keep old worn-out soldiers unfit for active service. Formerly, also, castings only took place once a year, and only once a year was it possible to get rid of horses that certainly were not worth the forage they eat. Now I am glad to say that authority is given for selling such brutes at once, and for immediately replacing them by purchase.[1]

It now remains for me to make some suggestions as to how in the event of war we might obtain trained horses to place in the ranks of our artillery and cavalry. I need not say that unbroken horses untrained to stand fire would be a source of danger rather than help. We see from the Returns that more than 9,000 Yeomanry attend training annually. At the smallest computation 5,000 of these horses ought to be fit for our artillery or cavalry in a campaign. Let the Government give, say, 5*l.* as a capitation grant for each horse that has been inspected and pronounced in any way fit by the Inspectors of Yeomanry. In return for this the owner would register his horse and agree, in the event of war, to part with it at a fair market price, which would be named by a mixed commission. In this manner we should have a trained reserve of about 5,000 horses, which could be called up at any moment. Let us also turn for assistance to our Volunteers. Our mounted volunteer force is not now very formidable, and, in fact, it only numbers about 400 men. The only reason that keeps it so low is the want of horses. Let us simultaneously improve the efficiency of our Volunteers and of our

[1] *Vide* Appendix D.

Army alike. Let our Government draft annually from our cavalry regiments, say, all horses over eleven or twelve years, which would go to form volunteer mounted corps. These horses would form a valuable reserve in time of war; might be kept until they reached the age of fifteen or sixteen, and then become the property of the man that kept them, condition being of course made that man and horse alike should attend a certain number of drills annually, and should be periodically inspected.

In the first instance a start might be made, and the nucleus of a mounted volunteer force established by the purchase of, say, several thousand Canadian and Australian horses, which might be presented or sold at a reduced price to mounted volunteer corps, in the formation of which I am perfectly confident we then should find no difficulty. Of course these suggestions involve a certain expenditure, but I may add an expenditure most trifling compared with that of the Suakim and Berber railway, and other similar luxuries in which recently we have so recklessly indulged. It is a question which the British public will have to decide, as to whether they wish to have an efficient fighting army or an inefficient non-fighting army. If they desire the former they must not, to use a nautical expression, "allow the ship to go to the bottom for the want of a halfpennyworth of tar."

The scope of this lecture scarcely includes the general question of the deficiency of horses in the United Kingdom, our wants in the event of war, and how they may be supplied; as space fails me I have entered into this question elsewhere.[1]

Appendix A.

The Regulation Height of Remounts for the Prussian Army.

The minimum height laid down by regulation is as follows:—

Cuirassiers of the line ..	5	feet	1	inch or	15	hands	1	inch.
Hussars and Dragoons ..	4	„	10	„	14	„	2	„
Lancers	5	„	0	„	15	„	0	„
Artillery wheel	5	„	2	„	15	„	2	„
„ leaders.. ..	5	„	1	„	15	„	0	„
„ saddle	4	„	1	„	14	„	3	„

The average height was—

Cuirassiers	5	feet	5·1	inch or over	16	hands	1	inch.
Hussars and Dragoons	5	„	1·7	„ „	15	„	1¾	„
Lancers	5	„	3·4	„ „	15	„	3½	„
Artillery	5	„	3	„ „	15	„	3	„

[1] *Vide* Appendix E.

It must also be noted that the German foot is a trifle longer than ours, in proportion of 100 German feet to 103 English, and also that measurements are taken not as with us perpendicularly from the ground up to the point of the wither, but from the ground round the swell of the shoulder to the wither, thus enabling the height to give a better idea of the actual strength of an animal and of its muscular development.

The Remount Depôts of the Prussian Army.

These remount depôts are established at the following places:—

Neuhof Treptow.
Jurgaitchen.
Sperling.
Neuhof Ragnit.
Kattenau.
Bärenklau.
Brakupönen.
Wirsitz.
Ferdinandshof.
Arendsee.
Preussich-Mark.
Wehrse.
Liesken.
Hunnensrück.
Oberseenerhof (Ulrichstein).

All except the last two are in the former kingdom of Prussia. Many of them are of comparatively recent creation. Wirsitz, in the province of Posen, was formed in 1860; Ferdinandshof, in Pomerania, in 1832; Hunnensrück, in Hanover, in 1867; Arendsee, Duchy of Saxony, in 1868; Preussich-Mark (Eastern Prussia), in 1869; while since the French war, three more depôts have been made, namely, Ulrichstein, in the Grand Duchy of Hesse, in 1872; Wehrse, in Silesia, in 1874; and Liesken (Eastern Prussia), in 1876.

These depôts supply horses for the entire army that is under control of the Ministry of War at Berlin, with the following exceptions. The Grand Duchies of Mecklenburgh, in order to protect their own horse-breeding farmers, have stipulated that the two cavalry regiments and the division of artillery which they supply to the German Army should be mounted solely by the provinces from which they are drawn. As these Duchies have no remount depôts, their mounted services have to buy horses which are already made, that is, of five years old and upwards. Hence the average price of remounts, as fixed in the Prussian budget, has to be increased by a sum which is credited to the administration of the Mecklenburgh Duchies, and which represents what would have been the cost of keeping their young horses at remount depôts. This sum goes towards the price which is given for the made horses.

The Grand Duchy of Würtemburgh, on the other hand, which like-

wise has no remount depôts, adopts just the opposite principle: it takes all the horses for its contingent from the Prussian remount farms, and pays the Berlin Ministry at War what is calculated to be the cost of keeping these animals from the date of their purchase until they are fit for the ranks. In the Budget of 1884–85 Würtemburgh had to pay the Prussian Ministry at War 109,370 francs for the keep of 350 young horses, that is, at a rate of 312 francs for fifty, or about 12*l.* 10*s.* a head.

The kingdom of Saxony also has no remount depôt horses itself entirely in its own districts, and buys none but made and seasoned animals; in 1884 the number was 546.

Lastly, Bavaria, appreciating the advantages of the Prussian system, has entirely adopted it since the year 1872: from that date five remount depôts have been formed in the kingdom of Bavaria, and a general remount branch of the Ministry at War has been established on the same principle as at Berlin.

Appendix B.

The Price of Remounts in the French Army.

About half a million sterling is voted annually in the budget for this purpose, and the following are the regulation prices for the various description of animals:—

	£	
Officers' horses—		
Cuirassiers	56	
Dragoons	50	
Light cavalry	46	
" "	32	(bought in Algeria, principally Arabs).
Artillery Engineer train	50	
" " "	32	(bought in Algeria).
Troop horses—		
Cuirassiers	46	
Dragoons and schools	40	
Light cavalry	36	
10 regiments of Chasseurs d'Afrique	28	(bought in Algeria).
Riding horses—		
Artillery Engineer train	40	
" " "	28	(bought in Algeria).
Draught horses	36	
" "	30	

Great facilities are afforded to Officers for the purchase of horses at reasonable rates. As a rule, Captains, Lieutenants, and Sub-

Lieutenants, whose duties necessitate their being mounted, are provided with one horse by the State, while Captains of cavalry receive two horses gratis: other Officers are permitted to purchase horses from Government at the original cost price.

Appendix C.

The Price of Remounts in the Russian Army.

The prices paid for remounts in Russia are as follows:—

	Roubles.	£ s.
Cuirassiers of the Guard	300	47 11
Light cavalry, horse and field artillery (except teams of ammunition wagons)	200	32 0
	207	32 15
Ammunition teams	125	19 6
Cavalry, field and horse artillery of the line	125	19 6
Ammunition teams	100	15 9

It will be seen from the above comparative prices that heavy powerful horses must be extremely scarce and dear.

The conditions to be fulfilled are these:—

	Height.	Age.	
	hands.		
Cuirassiers	15·1 to 16	4 to 7	With a margin of 1 in. in height for very well shaped animals.
Light cavalry of the Guard	14·3 „ 15·1	4 „ 7	
Cavalry of the line	14·2 „ 15·6	4 „ 6	
Artillery of the Guard	14·3 „ 15·1	4 „ 7	
Artillery of the line—			
Riding	14·1 „ 15·1	4 „ 6	
Draught for guns	13·3½ „ 15·1	4 „ 7	
„ for wagons	13·3½ „ 14·3	4 „ 7	
Horse artillery—			
Riding	14·1 „ 15	4 „ 6	
Draught	14·1 „ 15	4 „ 7	

Although it would seem that with such an unlimited supply of horses no difficulty ought to be experienced in obtaining seasoned animals for the ranks, even in this country the system of remount depôts has been adopted, and horses are kept at them for the purpose of being well fed and looked after for a year before they are put into the ranks. It appears that these depôts are established at such places as the Governor of the District may appoint, and that when the remounts are sent to them they are inspected and received by commissions composed of the General commanding a cavalry division, the General commanding the cavalry depôts, and a third General

appointed by the Inspector-General of Cavalry; also that horses are condemned and rejected by a similar commission somewhat differently constituted.

Appendix D.

The Peace Establishment of the Mounted Services in England.

In the Army Estimates for 1885-86, the following are the figures for horses:—

Life Guards and Horse Guards	825
Cavalry of the Line	6,577
Royal Horse Artillery (including Riding Establishment)	1,446
Royal Artillery (including School of Gunnery)	3,262
Royal Engineers	242
Commissariat and Transport Corps	1,100
Total Horses (exclusive of Officers' Horses) on British Establishment	13,452

Considering the age at which horses are necessarily bought in this country and the usual casualties, I do not think that I shall be wrong in following the estimate made by Colonel Keith Fraser, of the deductions which would have to be made from the nominal establishment, to show the effective strength in case of a war. He reckons this deduction at 30 per cent., which would give us only about 9,500 horses fit to take the field for our cavalry, artillery, and engineers—and of reserves in horses at the present moment we have none.

When we turn to the auxiliary forces, we do not find the prospect more satisfactory as regards the mounted branches, in fact they present a ludicrous contrast in numbers to those services for which horses are not required.

The establishment of the militia for 1885–86 is as follows:—

Artillery	19,656
Engineer	1,449
Infantry	116,239
Channel Islands militia	3,990
Total	141,334

Establishment of yeomanry—

All ranks	14,404
Present at training in 1884	9,548
Deficiency short of establishment	4,856

In the volunteer service the contrast is even still more striking, the following are the numbers stated in the Estimates:—

Light horse	425
Artillery	44,482
Engineers	10,723
Mounted rifles	61
Rifle volunteers	195,321
Medical Staff Corps	405
Total	251,417

Of whom only 486 are mounted.

In order to place our cavalry on an effective war footing, exclusive of the household troops, we should require no fewer than 5,020 additional horses. I make this calculation from the following data:—

The war establishment in horses of a cavalry regiment is 480 troop horses, 44 for transport, total 524.

At the present time, on the British establishment, we have 6 regiments of 400 horses, of these 1 is now in South Africa, and 2 in Egypt; 13 regiments at 300 horses. From our absence of remount depôts, about 20 per cent. of these are immature and unfit for a campaign; allow 5 per cent. for sick and casualties, we find we should have an effective strength of about 4,934, and should require 9,956: thus no fewer than 5,020 additional horses would be wanted, namely, 4,184 for saddle and 836 for transport purposes.

As regards artillery, the following are the figures:—For two army corps only, 7,384 artillery horses would be wanted; our present establishment is 4,708. Deducting one-fourth non-effective, we have a balance of 3,850 trained animals that would be required.

Appendix E.

Addenda.

The General Question of the Supply of Horses in case of War.

The general question of the supply of horses in this country is so closely connected with the remounting of our cavalry and artillery, that it is wholly impossible to discuss the latter without also entering somewhat closely into the former and wider subject. Recent events have brought very vividly before our eyes the undoubted fact that at any moment we may be called upon to fight, and to fight desperately, not only for the integrity of the Empire, but perhaps even for our very existence as a nation. It seems therefore only right that we should face boldly, and face at once, any difficulty that may seem to lie in our path, since if we put it off until some more convenient season, the difficulty will still remain, the danger will still be present, while much valuable time, during which we might prepare to meet it, will have passed away.

It is generally acknowledged that from the resources of the Army which we now possess, and which cost the country about 15,000,000*l.* a year, we ought to be able to place at least one Army Corps in the field perfectly equipped within, say, one month, and a second corps in three months, and reinforcements sufficient to maintain these corps at their normal strength in six months' time. Considering the forces at the disposal of Continental Powers and the short time they require to bring them into action, it does not seem too much to expect this degree of practical efficiency from our own Army. Let us now consider how we should stand as regards the horses, without which no Army Corps could be mobilized.

The 1st Army Corps would require, transport included..		12,000
Of these we now possess, according to the Return in the Army Estimates, about	8,000	
It has been calculated by those best able to judge that a deduction of about one-third must be made from this number for those horses either too old or too young or otherwise unsuitable for actual service by about	2,600	
		5,400
Balance to be purchased		6,600
The 2nd Army Corps would also require		12,000
In round numbers the horses belonging to this corps now available are..		2,700
Balance		9,300
Thus to place two Army Corps in the field we should require to buy		6,600
Total		15,900

For reinforcements, at least 40 per cent. of horses would be required at the end of the first campaign; in the Crimean War 80 per cent. were wanted. Thus within a few months of the outbreak of a war, no fewer than 25,500 horses would have to be purchased.

The question arises, how and where could these animals be obtained?

From the Board of Trade Statistics of 1881, the following were the number of horses in England employed in agriculture directly or indirectly:—

England	1,231,000
Scotland	193,000
Ireland	489,000
Total ..	1,913,000

that is about 2,000,000.

It appears from similar statistics, when the horse tax was last collected, that there were in England about 1,000,000 of horses employed privately or in trade.

We may therefore put down the total number of horses in these islands at about 3,000,000.

Of the agricultural horses, at least three-fourths must be deducted as too heavy for army work, leaving a residue of only 500,000; of this 40 per cent. must be deducted as under five or over twelve years, and of the balance only about one in five would be found sound enough for military purposes, leaving a balance fit for service of about 50,000

On somewhat similar calculations, it is reckoned that there might be available of trade and private horses about .. 20,000

Total 70,000

Although at first sight it may appear that this is a very small percentage of the 3,000,000 horses in this country, the calculation is rather over than under the mark.

The question arises, how many of these could be bought and in what time? In 1873 the greatest difficulty was found in obtaining 2,028 transport horses for autumn manœuvres; and according to the evidence of the purchaser, Sir Henry Storks, no fewer than 1,500 had to be bought in France. In 1878, by dint of the *greatest* exertion, 2,250 horses were purchased in four weeks, by which time the market was entirely exhausted; but in 1882, only 1,700 horses could be bought in seventeen weeks. As a point of fact owners of sound horses will not part with them, and in any case there is not a sufficient balance of serviceable animals in the country to supply our wants.

However much we may shrink from realizing the fact, it is nevertheless undoubtedly true that horse-breeding is decreasing in England, and that there are now far fewer good horses among us than in former years. From 1868 to 1882[1] inclusive, the average number of horses imported into England has been 14,598, at 28*l.* apiece—the average exported 4,240, at 60*l.* apiece, showing that we are losing the good and receiving the bad animals. For many years past there has been a constant drain of our best brood mares and sires, and the extension of railroads and general means of communication have tended to make good horses, more especially those suited to the saddle, less of a necessity than in former days.

It has been calculated that for the 1st Army Corps the home market could not provide more than 2,500 horses in one month, and that there would be a deficiency of more than 2,000 unprocurable, while for the 2nd Army Corps and the reinforcements, the animals simply are not to be had in these islands. The situation is most serious and alarming, but nevertheless it must be realized and faced; as before mentioned, in the event of war, the Continental markets

[1] Board of Trade Returns.

would as a rule be closed to us, and we should be absolutely crippled for want of horses.

How, then, is the difficulty to be met? In the first place, it would seem desirable, in the 1st Army Corps at least, to retain no horses that are not fit for service. If all over fifteen were drafted, and depôts established for remounts, as I venture to suggest, this would be much facilitated. Secondly, it appears absolutely essential to maintain in peace a sufficient number of horses to fill up the balance required for the 1st Army Corps in the event of war. If the Yeomanry and Volunteers were turned to account, as I have proposed, we should have a reserve of horses, and above all, trained horses, such as could not be produced in any other way, and which would suffice for the purpose. Lastly, we have to consider how animals are to be produced for the 2nd Army Corps and for the reinforcements. As we cannot depend on foreign markets for these, we ought to turn to the Colonies. Canada, above all others, has great resources, and offers a great field for enterprise in this respect. Most favourable reports were received of the capabilities of Canadian remounts for military purposes, both in 1837 when the 7th Hussars were quartered in Canada, and also when the 13th were there in 1863. Colonel Jenyns, who commanded the 13th, in his evidence before Lord Rosebery's Committee, speaks very strongly regarding the qualities of the Canadian horses. He says that they are "first-rate troop horses, that they stand a great amount of hard work and exposure, are fairly bred, and capital hacks." He strongly recommends Canada as a favourable ground for the purchase of remounts, and says the present great resources of the country might further be greatly developed.

Lord Melgund, who has just returned from Canada, where he is now Military Secretary to the Governor-General, also speaks very highly of the Canadian horses. He saw their capabilities tested in the recent war, in which he took part, and he specially referred to the excellent quality of the draught animals, and to their comparative cheapness as regards price. I have also had the benefit of seeing most interesting and important letters from an Officer of the Canadian Hussars, and from General Strange, who is a large breeder of Canadian horses. They both testify to the ease with which an almost inexhaustible supply of excellent horses might be obtained at a very small comparative cost. It appears to me that the Government should lose no time in turning their attention to Canada, and the sooner that they establish an agency and a large remount depôt in that country, the better it will be for the practical efficiency of the Army, and hence for the safety and prosperity of the Empire.

Time and space alike make it impossible to enter into further details, or to dwell more on this important subject. If, however, I have succeeded in drawing attention to it, and to its vital importance, so as to cause some corresponding action, I shall consider that indeed I have been highly favoured by fortune.

Viscount MELGUND: When Colonel Russell spoke to me the other day about Canadian horses, I told him I should be very glad to give him any information in my power. It was only the day before yesterday that he spoke to me about them, and of course I have got no statistics which I could lay before you as to the number of horses available in Canada, but from what I have seen in going about Ontario and Quebec, I certainly think that there is a very large supply which would be extremely useful for cavalry purposes. Colonel Jenyns, of the 13th, left a very great reputation behind him as regards horses, and I should say the Canadian horses generally are particularly well suited for our cavalry. They are not very big, about 15·2, or 15·3, and generally show a good deal of breeding. There is some excellent old English blood in the country, and the horses I have seen are remarkably sound. As regards price they certainly are a good deal cheaper than English horses. Horses between three and four years old could be bought for 150 dollars, or about 30*l*. I have never carefully gone into the thing, but I am quite certain a large number might be bought at that price. The average price of a pair of carriage horses is 500 dollars, that is for a ready-made pair, 100*l*. The transport horses which we had in the north-west the other day were remarkably good. They had a good deal of Clydesdale blood in them, but they were much lighter horses than the Clydesdales we have here, and are very well suited for transport, showing a good deal of quality and still generally averaging about sixteen hands. They were the finest transport horses of the sort I have ever seen in any country. On our lines of communication we had about 800 of them at work, and really I hardly ever saw a bad one. One thing I am quite certain of, if Government were to decide to buy horses in Canada, it would be quite useless to send anybody over from this country to buy with the idea of bringing them straight to England. It would be absolutely necessary to establish some depôt on the Canadian side, which would be a very easy thing to do; something in the way of a Government ranche might be started and the horses could be half got into condition before being sent over to some depôt on this side. In Kentucky, I believe horses are quite a glut in the market and can be bought almost at a nominal price. In Montana the horses are the very horses for cavalry, all the north-west mounted police are mounted on them. They make uncommonly good horses, they are of very good quality, very hard and very tough. It would be well worth while if the Government were to take the matter in hand, and to consider the possibility of establishing some sort of depôt on the Canadian side, and I really believe in case of war we should find it of great use. I am sorry I have not got any reliable statistics that I can lay before you, but if they will be of any use I shall be glad to collect them and forward them to Colonel Russell.

Rear-Admiral ARTHUR: Although a naval Officer I took great interest in the breeding of horses during the time I was Naval Attaché in America, and I can quite corroborate what Lord Melgund has said. There is a very fine breed of horses in the Alleghany ranges, but they are not in sufficient number at present to influence the supply. Some of the ranches down in Wyoming Territory produce particularly fine horses. I think those horses could easily be received at five years old for about 25*l*. a piece; I estimate the delivery in New York at 5*l*., and the passage over about 10*l*. The loss of horses in a sea passage is considerably less than is generally supposed. I remember during the Kaffir war of 1850, we took in "The Styx," an old paddle-wheel man-of-war steamer, upwards of 2,000 horses round the Cape of Good Hope, and landed them at Buffalo Mouth, crossing the bar in surf-boats, without losing a single horse. I think one great difficulty in securing our horses on the American side of the water is that in war time, when we particularly required them, our supply might be cut off, otherwise, supposing you could guarantee to take a fixed number each spring, a very fine quality might be secured from America at a reasonable price.

Colonel KINGSCOTE: As the gist of this paper has been a subject to which I have given some little attention, perhaps I may be allowed to say a few words. It is a matter of gratification to hear what Lord Melgund has told us, that we have a supply of horses to fall back upon both in Canada and America. From a short visit I paid to those countries two years ago, I can quite confirm what has been said as to there being a great number of very useful horses there, which I think

might be utilized for cavalry purposes here. But still the question remains, how are we to keep up the supply of cavalry, artillery, and transport horses in *this* country? I think it is one that is getting more and more serious every day. There is no doubt the farmers find it much more profitable and much easier to breed cart than to breed nag horses, and owing to their being able to turn their money over much more quickly, they are, as I think everybody who travels about the country must know, breeding very largely cart horses and very few nag horses. It is getting a very serious matter how the public are to be supplied, and whether the Government will be able to keep up the supply of horses for the Army. Colonel Russell has intimated, and I do not wish to controvert his opinion, that depôts established for the breaking in of young horses would be a very desirable thing, and that the Government might also keep stallions at the depôts. I think the depôts, as regards young horses, would be most useful, but I am afraid the keeping of stallions would be of very little use. You must take the stallions to the farmers' doors if you want them to breed horses. They will not take the trouble or go to the expense of sending their mares any distance.

Colonel RUSSELL: I suggested that they should have headquarters, and that the stallions should be distributed round the country as in Germany.

Colonel KINGSCOTE: If the Government would hold stallion depôts, and let them out all over the country on certain low terms that would be a very different, and I think a very advantageous matter, but you may depend upon it unless you do get the stallions brought to the farmers' doors, they will not use them. I was one who some years ago in the House of Commons and elsewhere strongly advocated that the money now given for Queen's Plates should be given as prizes for stallions and brood mares foaled by those stallions. The Royal Agricultural Society have lately taken up this question. Although the Council have not had the Report of their appointed Committee, yet being on the Committee, I may state that their idea is, if they can only obtain the money, to give prizes in particular districts for stallions covering at low prices, at 2*l.* 10*s.* or 3*l.*, giving such stallions good substantial prizes, say 200*l.* or 300*l.*, so as to make it worth a man's while to buy a sound horse—they must all be passed as free from any hereditary disease—so as to induce farmers to breed more. Whether this will be done or not I cannot say. There is no doubt that we should be in very great straits if war broke out for want of horses for the Army and transport, and unless you can find the greater part of them in this country, I am afraid we should be in extreme difficulty. Whenever we have wanted extra horses, for many years, whether transport or cavalry, we have been obliged to go abroad, and if ever the day should come that our resources were cut off, we should find it extremely difficult to get them at all. If by this lecture, or any other means, the Government could be induced to take such steps as would lead farmers to breed more nag horses in this country, I am sure it would be very much for the public advantage.

The CHAIRMAN: Gentlemen, before proposing a vote of thanks to the lecturer, which I am sure you will readily give, I wish to make a few remarks, but they will be discursive, because they are merely jotted down from what has passed. The lecture has run over a great deal of ground, and it would be almost impossible now to put the points together in anything like consecutive form. Colonel Russell has urged very strongly the advantage of studs. I suppose nobody would question but what studs would be an advantage to regiments, unless you take the contrary side of the question, which is this, namely, that the Chancellor of the Exchequer is prepared to give only a certain sum of money for the Army, that is for the cavalry branch of the Army, and it is a question whether it would be an advantage to us cavalry regiments to have our horses kept and trained for two years away from us, or to have them sent to the regiment at once. My own impression is if you have only a certain sum of money which can be spent, you had much better have the young horses at the regiment. The lecturer thinks that horses are broken down by too early work in the ranks under the present system. The brigadier commanding the cavalry ought, however, to insist that they are not overworked, but, I think, it would be a great loss to the training of the men as riders if the young horses were trained away from the regiment. I think that in losing the training of young horses we should lose one of the great

points of the cavalry trooper. You must remember that in war, or in the preparation for war, there is very little time to train horses; the work must be done quickly, and unless you have a corps of non-commissioned officers and men who are used to the class of work you will find very great difficulty in getting it done almost *impromptu*, as you would have to in war. Therefore, unless a large increase takes place in the war estimates—which is not the least likely to be the case—I must think that the system of sending horses direct to regiments is better than keeping them away from the regiments a year or more, with the stud. Lord Melgund has mentioned the advantages of Canadian horses. I am not disposed to undervalue the Canadian horse; but the objection to getting your horses from abroad on a pinch is this, that whilst at home we know by practice owners do not maintain more of an expensive article, such as horses, than what they absolutely require for use, the same, as far as I can ascertain, prevails in foreign countries. If you take boots and shoes, or any such articles, a man will keep them in stock, because they cost nothing to keep in stock; but if you take horses, you will find very few people keep more horses than they *absolutely* require for their trades. If you go to Marshall and Snelgrove's, or any firm in London, if you go to a doctor who keeps a couple of horses to drive to see his patients, you will find that they keep no more horses than they absolutely require, and I believe it would be impossible to purchase any large number of trained horses, such as you would require for the purposes of war, either in this country or in any foreign country. In foreign countries you can get a number of unbroken horses very cheaply, but these are not what you want for war. For the purposes of war no horse ought to be under five or six years old; he must be ready broken and fit, if not to go in the ranks, at least to put to work at a day's notice. I think there would be very great difficulty in completing the horses required for cavalry and for draught on the occasion of any war. I think the difficulty would be greater in regard to cavalry horses than it would be as regards draught horses. The fact is, as has been stated by one or two Officers, that the number of riding horses in this country is decreasing year by year, whilst, on the other hand, the trade of the country has required, and is requiring, an increase in the number of draught horses. I think the cause of that must be perfectly obvious to anybody who lives in an agricultural district. Twenty years ago if you went into any of our large market towns you would find some 300 or 400 farmers in the market, all of whom had ridden to the market; but with the improvements in the bye-roads driving into market became the practice. Now, of quite late years, you will find very few farmers who ride to market, not very many drive, but the greater number come in by train. I am sure in the market town near which I live I do not suppose there are half-a-dozen farmers ride into market; perhaps a couple of dozen drive, and a couple of hundred or more come by train. I think that is one reason, at least, why riding horses are failing in the market. But there is another reason also, namely, that the public like a large coarse horse at three years old. They will give more for a coarse horse, showing what they call bone and size, at three and four years old, than they will for a better bred animal which may become a valuable hunter, charger, or riding horse, at six years old. That is a thing which it is impossible for anybody to interfere with. Public opinion, if you go to any fair, is in favour of a large, rather coarse, young horse. If you go to any of the Irish fairs, which I know more about than I do about English fairs, you will find the colts the best suited to your troop-horse purposes are all bought by the dealers at about 25*l*., whilst a coarser animal which after you have kept him a couple of years is nothing more than a common draught horse fetches 30*l*., 35*l*., or 40*l*. It has been proposed by one or two gentlemen that the Government should keep stallions. There are certain advantages indeed, but there are certain disadvantages which I think prevail. If the Government keep stallions they will discourage the keeping of good stallions by private persons. The number of stallions that travel this country is enormously large, and I do not know that any Government establishment would be prepared to take up the supply of the country, because you must either take up the supply of the whole country, or else you must not compete with private trade. I do not think it would be possible for the private trade in stallions to go on if the Government chose to provide really superior animals at 50*s*. a piece. The gallant lecturer has adverted to the

fact of the rapid deterioration of our young horses by their being ridden in the ranks too soon. My own impression is if that is the case the Officers commanding regiments are to blame. There is no very great difficulty in saving young horses for the first few months of the season. But I question his facts *in toto*, because I find that on an average of castings, about 10 per cent. is found sufficient for the cavalry, that is to say, that on the average the remount horses that come into a regiment do ten years' service, that is to say, they carry a man with very considerable weight at a rapid pace over, perhaps, broken ground, such as is incidental to military manœuvres at the present day, and, I think, that average of ten years is extremely creditable to the cavalry service. A great many gentlemen consider that if they get five years' work out of their horse, the horse owes them nothing, and I must say I think the fact that our horses last on an average for ten years goes far to prove that they are not in reality deterioriated or ruined by early work. Some remarks were made about the Hungarian horses, and about the prices at which Hungarian horses could be bought, and, I think, remarks were also made about the low prices at which horses could be purchased at several places abroad. Well, now, as far as my experience goes—I was on the Committee which sat upon this question some two years ago—there is rather a fallacy about the low prices at which horses can be bought abroad. The fact is the *surplus* horses in the market can be bought up cheap, but the moment you have taken up the surplus in the market, owners will not readily part with horses which are useful to them or to their trade, and, therefore, after comparatively speaking a small number of horses have been bought, the price of a horse rises very rapidly in the market. As regards these Hungarian horses, a committee of Hungarians came over to London about six or seven years ago, stating that they were prepared to supply any number not exceeding 10,000 horses at 38*l.* apiece, guaranteed to be all 15·2, all to be five or six years old, landed in the London Docks, to be taken or not taken as the Government inspector in the country chose. At that time there was a great deal of difficulty about getting four-year olds for the cavalry, and occupying at that time the post of Inspector-General of Cavalry, I recommended the Adjutant-General, with a view of snuffing out the combination of the Irish dealers, to accept the offer of the Hungarians, and that was the principal object for which those Hungarian horses were purchased, and the result, so far as that goes, has been perfectly satisfactory. The regiments have not since had any trouble in getting the dealers to supply what are termed four-year old horses. Shortly afterwards I was rather amused at seeing a letter from ——, one of the largest Irish dealers, in which after having during the spring protested against the possibility of supplying four-year-olds, he wrote to say how it was, that there really was such a plethora of horses in the country just at present, that he could not only supply four-year-olds, but that he thought he could supply a very considerable number of five-year-olds, at the usual troop price. The point I am coming to is this. I think Officers who have been abroad, and have heard what is said at the ports and other places, form a very erroneous idea as to the number of animals which any country can supply. Here we had a Hungarian Committee coming over and saying they could supply 10,000 animals. The Government sent a Committee over to purchase; they remained in Hungary six weeks with an order to buy 700 horses, but they came over with something less than 400, of which a considerable proportion were not more than 15·1, some as low as 14·3, and a great many of them four-year-olds. That was the result of the statement made in London by the Hungarian Committee, that they would supply 10,000 horses all guaranteed to be 15·2, between five and six years old. I expect a great many other places you hear of would give much the same result. A remark has been made about the objectionable system of agents of the same Government, that is to say, practically Commanding Officers and dealers competing with each other in the market. Well, now, there has been rather a fallacy, I think, on that subject. Where the price is limited, as the price of the troop horse is limited, it can scarcely fairly be said the different Commanding Officers compete against each other, or the dealers compete against each other. The fact is, speaking in the interest of the agriculturist, it is rather a good thing that these dealers being limited to charging the Government 40*l.* should to a certain degree compete against each other, and so raise the price to the breeder of the

horse. In fact, under that system the breeder gets a larger proportion out of what the Government pay than he would do otherwise, whilst in no respect is the State injured, because the price, whether the dealer gives 20*l.*, 25*l.*, or 35*l.* to the breeder, in all cases is 40*l.* Colonel Russell spoke of the value of the Yeomanry as a reserve. Well, speaking in the presence of the Inspector-General of Yeomanry, I do not wish to say anything to offend him the least in the world, but I think he will bear me out, though he won't say so, because it would give offence to the branch of the Service which he commands—that a very considerable proportion of the horses in the Yeomanry, exceeding one-half, are not the property of the men who ride them. Everybody knows the horses are lent for the purpose. A very large proportion of Yeomanry in former days were farmers and farmers' sons who rode at the Yeomanry training the same nag horses as they used to ride to market. Since the practice of riding nag horses to market has gone by, the farmers very generally do not keep riding horses. The Yeomanry very generally are mounted on horses either lent or hired for the week. The best proof that that is the case is that on a Yeomanry Commission one of the grievances put forward by the Yeomanry was that the horse tax had been abolished. At first it was not very clear that that was a grievance, but it was then stated that the real fact was a large proportion of the horses were borrowed from other people; they were counted as Yeomanry horses for the year, and so the real owner saved the horse tax, and that remunerated him for lending the horse to the yeoman for the week. I think you would find you would not get a very large reserve of horses from the Yeomanry. It has been stated that it is an advantage that the Yeomanry horses are ready trained. Well, they get a training of seven days, but I do not suppose that that goes very much further than that regiments, if horses were handed to them which had not been in the Yeomanry, would be able to give them before the ships were ready to take them on board. It has been stated that the middleman, as they call the dealer, is an objectionable person. There are various systems of buying horses, but I believe that in this country and also in most countries it is found necessary to have a go-between the wholesale, that is to say, the original purchaser and the person who wants to buy. It is so in every trade, in Covent Garden Market, in horse-dealing, in everything there is a middleman, and the fact, I believe, is that you transact your business better and more cheaply probably through the middleman than you do if you try and do it yourselves. For instance, if you try and buy horses yourself you can, as a gentleman, take a veterinary surgeon with you; you put up as a gentleman at an inn, and it costs you a couple of pounds a-day. Very likely you go from one fair to another and do not get any horses at all, and you find you run up a bill which considerably exceeds at the end of the year the 1*l.* a-piece which is given for buying horses. The dealer employs a lower class of men; I believe they generally give their "runners," as they call them in Ireland, 2*s.* 6*d.* a-day and 5*s.* for each horse which they buy successfully. I believe a middleman is almost a necessity. Colonel Ravenhill, a very enthusiastic man, has been endeavouring to do without a middleman, and I think that being a very active and energetic man, taking the matter into his own hands, possibly he may make himself into the middleman, and he may be able to carry on the business, but as a rule I think you will find the middleman is a useful man. And I will give you another reason for that. If you go into a fair there is a hustle and bustle; you are not used to it; it is not so easy to judge of a horse with a lot of horses running about, you get your eye off. A middleman is used to it, it is his trade; he brings the horse to you into a side road to have a good look at him, and then you are able to form a pretty good judgment as to whether it is the class of animal you want or not. I think you will find the middleman is not so objectionable as he might be. The lecturer started with some remarks on the system of Commanding Officers buying horses, and said in former days it answered better than it does at the present day, because Officers commanded regiments of longer periods than they do now. Well, no doubt that was an advantage, but at the same time you have only to look on the other hand as to what the other systems are. There is one system of Commanding Officers in regiments who, if they do not know much about it, generally speaking have the wisdom to get the assistance of some Officer or veterinary surgeon who does. As regards the Commanding Officer's system the Inspector-General of Cavalry passes

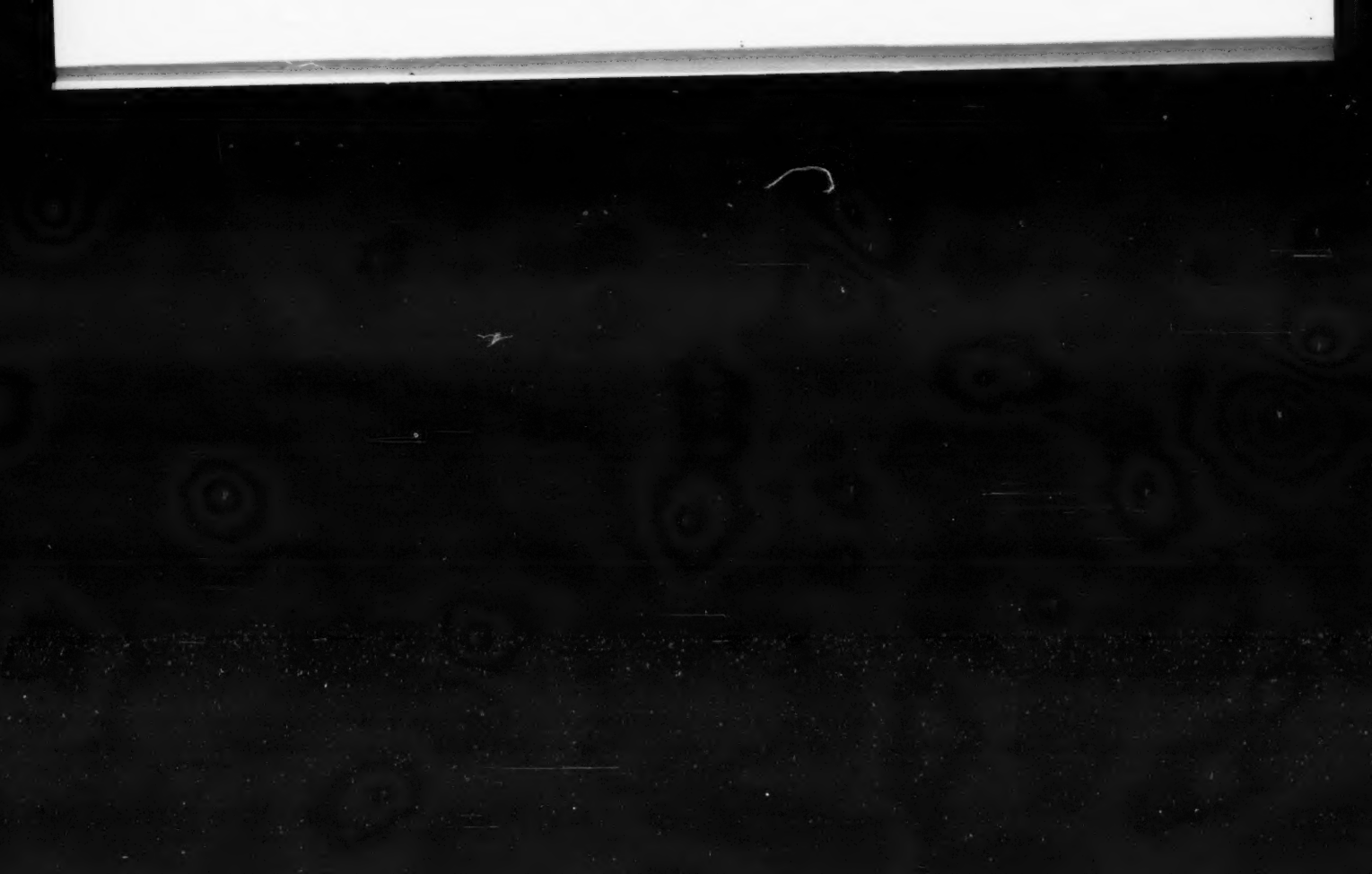
the animals, and if the Commanding Officer finds he is not very successful in the eyes of his superior, he generally before the next year gets the assistance of some one a better judge than himself. Another system is that which you have in the artillery, which is a selected buyer. I have seen a great many cavalry regiments and a great many of the artillery, both R.A. and R.H.A., and I must say on the whole, considering the greater difficulty there is in finding riding horses over finding draught horses, I am well satisfied with the results of the system of leaving the mounting of cavalry in the hands of Officers commanding regiments. There is one objection to the system of Officers commanding regiments, and that is that you cannot apply it in war. The regiment is ordered abroad, and the whole organization is broken up. An attempt, of course, is made to supply that by means of a selected Committee in war, and I do not know that there is any better system that you can adopt than that. If you were to go in for the system of a select Committee buying horses always, they no doubt would make arrangements which would be somewhat useful in war; but, on the other hand, when Officers commanding regiments buy horses they are individually interested in it. If they do make mistakes they, generally speaking, make the best of their mistakes, and on the whole, as far as I can see, I do not know that there is any system which would answer better. There is a system in India which I should mention in which the Committee buy horses always at the different ports—the Remount Committee of Calcutta, of Bombay, and of Madras. I think it is fairly successful, but there again you are dependent on the selection of the Committee. The Committee is not always selected because they are the best judges of horses. I have known Officers sent down to these Committees who have known very little about horses, and the result has not always been very satisfactory. With reference to Government assistance to breeders, an immense sum is given in racing which I suppose is the foundation of the best stock that can be. I look upon it myself that all Government interference is an evil rather than a real use. Private enterprise has produced, I believe, admittedly the best breed of horses in the world. That has been done by private enterprise, and I for one should be very sorry to see private enterprise interfered with in any way by the well meant, but I think injudicious, system of Government interference or assistance. I beg now to move a vote of thanks to the lecturer, and perhaps he will comment on what his commentators have said.

Colonel RUSSELL: Sir Frederick, I thank you extremely for your vote of thanks. I have not much more to say, my lecture, as you remarked, went over wide ground and, I hope, was fairly exhaustive. I must, however, remark with reference to the question of Commanding Officers buying remounts that, although it is one of the most interesting duties which they have to perform, I cannot but think that, in the interests of the Army, this duty should be placed in other hands. The present short period of command would appear to make a great difference, now the average is three years, and very frequently two years is the limit; hence a Commanding Officer has no time to profit by his experience or by the advice given him by the Inspector-General of Cavalry. It has been acknowledged that the present system is inapplicable in war, which alone is a sufficient condemnation; our Army, I hope, is not intended for peace duties alone. Commanding Officers, moreover, have no time to wander about to fairs; they must necessarily depend on dealers, whose profit should go towards providing a better class of horse. As regards remount depôts, I venture to think that we must attribute some weight to the fact that all the great Continental nations without exception have found their necessity, and this too although foreign Powers as a rule have far greater facilities for the purchase and acquisition of horses than we possess. I must also venture to point out that the establishment of remount depôts or stud farms in no way would deprive regiments of the duty of training young horses. If, as I have suggested, young horses were drafted to regiments, say, in the autumn of the year in which they were five years old, they would be trained during the six winter months and would be ready for the drill season in the following spring. I see several Commanding Officers here, and I feel sure they will agree with me in saying that it is a cause of great inefficiency and embarrassment to a regiment to have on its strength a number of untrained young horses. In the regiment which I have the honour to command there are at the present moment

no fewer than 141 horses under six years of age, and about 100 unfit to take the field. I think it would be far better if horses were not sent to regiments until they were four or coming five; during the winter months they might be trained, and thus a regiment would have an opportunity of turning out its full strength. As regards the Yeomanry, I had hoped we should have had some remarks from the Inspector-General of Yeomanry with respect to the service with which he is so well acquainted. As, however, he has remained silent, I would express a hope that the mournful view taken by the Chairman of the capabilities of Yeomanry horses is not borne out by facts, and I do venture to hope that there may be found a considerable reserve among the horses of the auxiliary service.

Colonel MUSSENDEN: I do not think that you will get 5,000 of these available of the proper age and the proper size.

Colonel RUSSELL: If we could only get 3,000 or even 2,000 it would be a great thing. The Chairman has not referred to my suggestion about our utilizing our Volunteer force as a reserve for the army, but I think that also may be considered. In conclusion I have personally to offer my best thanks to Sir Frederick FitzWygram for his great kindness in presiding here to-day, and also for the benefit we have derived from the remarks he has made, as I believe there is no one who has more experience than himself of the question which I have ventured to discuss.



Friday, July 10, 1885

GENERAL G. ERSKINE, Member of Council, in the Chair.

WHAT CAN THE VOLUNTEERS OF ENGLAND DO TO RENDER THEMSELVES FIT TO TAKE THE FIELD?

By Colonel R. HARRISON, C.B., C.M.G., R.E., &c.

The CHAIRMAN: Ladies and gentlemen, it is with great regret that I have to announce that Lord Wemyss is prevented from being here this afternoon, and from taking the chair as he had intended to do, in consequence of urgent business in the House of Lords. I am sure it will be a matter of very great disappointment to all who have attended to hear this paper, that Lord Wemyss is not here to give us the benefit of his advice and criticism.

THE circumstances of the last few months have once more stirred up the feeling that the force chiefly relied on for the defence of England —the Volunteers—are not as ready to take the field as they might be. But no one, as far as I know, has yet attempted to detail what requires to be done, or how to do it.[1]

The object of this paper is to endeavour to throw some light on this subject.

The process of turning a *peace* army—*i.e.*, a number of men, horses, guns, and other stores—scattered about where most convenient for purposes of subsistence or custody into a *war* army concentrated at certain strategical points is called *mobilization*.

Every nation in Europe except England has I believe thought this matter out. It has settled what portion of its available peace army shall be made a movable one capable of taking the field, and what part shall be equipped for garrison duty only; it has made elaborate tables showing what has to be done at each military district, and at each place of concentration as soon as the order to mobilize is issued; it has prepared all the necessary clothing, equipment, and transport, or, at all events, has arranged how and where to lay hands on them; and it has made up its mind how to obtain the required number of Staff and Departmental Officers.

All this might be done for England and her Colonies without spending a penny of the taxpayers' money. All that is required is that a few of the able Staff Officers, of whom the country possesses so many, shall be told off to do the task.

[1] The paper by Lieut.-General Sir E. Hamley on "The Volunteers in Time of Need," in the "Nineteenth Century" for March, was discussed for three days, and the discussion is reported in full in No. CXXX of the Journal.—ED.

But it requires *time*. It is the sort of work that cannot be done in a hurry and in the excitement immediately preceding a war.

This process of preparation cannot be done by the Volunteers, so I will say no more about it than to express a hope that it may be undertaken before it is too late. Unless it be done before an enemy sets foot on our shores, all that may be brought about by individual effort to fit the Volunteers for war will be simply thrown away.

But I will turn at once to the question, What is it that the Volunteers can do to make themselves more ready to take the field than they are now? and the answer I give is that they can do two things —they can provide themselves with *personal* equipment, and they can obtain instruction in the art of war.

No doubt a large proportion of the Volunteer Force will be employed in what is called garrison duty—that is, they will act on the pure defensive in the neighbourhood of their native towns and villages. Some, however, will be in a position to leave their homes for an indefinite period, and these latter will be available to be organized into war battalions, and to form a portion of the moving army. But whether employed in garrisons or in the field one and all require a personal equipment, and it would be better for simplicity of supply if all were equipped in a similar manner.

I have used the word *personal* equipment, and I have done so advisedly, because when we talk of equipment generally we mean all the paraphernalia required to enable any body of men and horses to take the field. This includes the equipment of the individual soldier, the equipment of the regiment, and the equipment of the brigade or the Division. It is the equipment of the individual soldier which is our present concern. What then is an English Volunteer likely to require in the field; what is the use of each article, and how is it to be carried? I will take them in the following order:— First, the clothes in wear, then the arms and accoutrements; and, lastly, any other articles thought necessary.

In settling the cut and material of a coat, as in everything else, success is only attained by working on some fixed principle. Now, the principles to bear in mind when we are considering what should be the dress of the soldier are, I think, these—taken in the order of their importance—its fitness for war purposes, its fitness for garrison duty, and its appearance.

In considering the dress of the Volunteers we are relieved from one of the difficulties attending the question as it affects the regular Army, inasmuch as the Volunteers are not intended for service elsewere than in the British Isles, whereas the regulars are liable to serve in every climate under the sun: and we have to deal only with the limited question, what is the best dress for war and peace for a soldier in England.

Bearing in mind the first principle laid down—the fitness of a soldier's dress for war—I cannot but think that a great mistake is made when an inferior material, to wear a short time, is issued instead of a good material to wear a little longer. This is done no doubt for the sake of appearance, because a new coat, especially

when men don't own the clothes they wear, and consequently are not over-careful of them, looks better than an old one. But when an army goes on a campaign, and when food and ammunition are rightly sent to the front before anything else, it is often months before men can be supplied with new clothes, and the shoddy coats and trousers go to pieces, and leave the wretched soldiers with nothing but rags to protect them against wet and cold.

What the colour of the Volunteers' dress should be is too big a question to deal with here. A good deal has been written and spoken on this subject, and opinions are much divided. If there were, as there used to be, two descriptions of infantry—heavy and light—I should say that the heavy infantry should have one colour and the light infantry another, which would be a great help to Commanders and Staff in the field. But when, as is the case now, all infantry are equipped in the same manner, and have similar duties to perform (the only difference between them being that what are called rifle regiments have a different drill with the rifle), I do not think it matters a jot whether so-called rifle regiments have a dress of a different colour to others or not.

As to the shape of the dress, I should say, speaking generally, that we cannot do better than stick to the Austrian tunic which we have adopted the last few years, and to which the eye has got accustomed. But in matters of detail this dress requires, I think, a good deal of alteration to render it fit for war.

Let me go a little more into detail. I think that a suitable dress for the Volunteers of England would be as follows:—

A tunic of good material fitting the back and waist, with a pleat on each side of the breast buttons so that there shall be ample play in front, an upright collar to protect the neck, loose sleeves fastened at the wrist by a strap, cartridge holders to hold ten cartridges stitched on the breast so that they shall not interfere with the accoutrements, breast pockets inside, and the badge and number of the regiment a little below the point of the shoulders so that it can be seen from the side. A *waistcoat* with sleeves to be worn under the tunic in cold weather. *Pantaloons* made to fit at the knee, but quite loose from the knee upwards, with pockets at the sides.

Leather gaiters fastened by string loops.

Shooting boots which can be tipped and heeled before a campaign.

A felt hat, looped up at one side, and ornamented by a feather.

A flannel shirt.

Hand-knitted socks.

A pair of gloves or mitts.

A flannel belt.

A pair of braces or a thin leather belt.

The advantages which, I think, the above-named dress possesses over the dress which is now generally worn by Volunteers, can only be tested in war, or in circumstances as like war as possible. You must have the hot march on a dusty road in the midst of a crowd of your fellow-men; you must have the heavy shower of rain to endure; the ford to cross; the ploughed field to pass over; and you must

bivouac under a hedge, or by the side of a hastily made trench; and, lastly, you must know what it is for the fate of your company, or your battalion, to depend upon the rapidity with which you can fire a few well-aimed rounds, before you can say whether the dress you wear is one really suitable for war or not.

But to resume. Our next consideration of the articles of personal equipment of the Volunteer are his arms and accoutrements.

In the case of these, just as in the case of dress, the important point to bear in mind is fitness for war. A soldier's rifle must not only be able to carry a bullet with extreme accuracy to a distance almost out of sight, but it must be of such a weight that it can be carried easily in addition to other necessary articles by a man of average strength, and it must be simple in construction, so that it shall not be put out of order by the rough usage that it is liable to in the field. The ammunition must be as light as possible consistent with being really serviceable.

While on this subject let me say a word regarding the change that is now being talked about in the Martini-Henry ammunition. Already the ammunition that we carry is heavier than that of any other European nation, and when we bear in mind that every ounce of extra weight carried by the soldier decreases his marching and fighting powers, and every pound of extra weight carried in the transport wagons decreases their power of bringing up supplies, we should, before making any change, consider most carefully whether the advantage gained is sufficient to counterbalance the disadvantage that would arise should any extra weight be thereby imposed on the marching army.

The question of bayonet or sword bayonet should be considered in connection with that of the intrenching tool, and nothing should be adopted without careful trial under circumstances as nearly like war as possible. It must be remembered that anything in the shape of a spade hanging to a soldier's waist is a great impediment to him when marching, and my own impression is that the best thing for the Volunteer to carry in the field would be a trowel fitted into a case which also holds the bayonet. The trowel can be constructed to cut brushwood as well as to make a kitchen, or trench for a bivouac, or riflepit for a sentry. When it is required to make regular fieldworks, the intrenching tools that are carried in regimental transport can always be made available.

The scabbard for the bayonet should be of leather, as at present, and the whole thing, viz., case, trowel, and bayonet, can be so made as to be easier carried and less of an impediment to the soldier than the sword bayonet with steel scabbard now carried by the Royal Artillery. Ammunition pouches must be sufficiently large to hold 100 rounds if required. The usual number of rounds carried in the field is sixty in the two pouches and ten in the cartridge holders on the coat.

The waistbelt must be considered in conjunction with the rest of the accoutrements. By itself it cannot support the weight that a soldier has to carry when he is completely dressed and equipped for

FIG. 1.

FRONT.

FIG. 2.

FRONT.

FIG. 3.

RIGHT SIDE.

FIG. 4.

BACK.

FIG. 5.

BACK.

FIG. 6.

LEFT SIDE.

Harrison & Sons Lith. St Martins Lane W.C.

war, and consequently it has to be supported by braces. The braces, as used by the infantry soldier in the regular Army, are so arranged that they carry the valise behind and support the ammunition pouches in front. In the latest pattern valise equipment they can also be used to support the belt when the valise is not carried, the great coat rolled and strapped to the waistbelt behind acting as a counterpoise to the ammunition pouches. When it is borne in mind that the knapsack or valise is never carried by the soldier on the march in modern war, there seems no reason why our Volunteers should be burdened with one, and I would suggest their being provided only with waistbelt, ammunition pouches, and braces, as supplied to the regular infantry in the latest pattern valise equipment.

I would, however, provide every Volunteer with a waterproof bag, similar to the one used by sailors, which will hold the articles of kit in excess of what the men carry on their backs. This bag would be left at the place of assembly of the regiment when the men marched away to take the field. It would be useful to them for the days or weeks that they remained there, and it would enable them to start away with everything they had on clean and in good condition. The bag is fastened at the top by a piece of cord, and can be padlocked if thought advisable. It can easily be carried a short distance on a man's shoulder.

The best water-bottle that I have seen is a galvanized iron one, enamelled inside, and covered with felt outside. It has a cork stopper. It should be made to hold $1\frac{1}{4}$ pints. If larger it is too heavy for a man to carry on the march. It should be made with a strap, to suspend it from the shoulder, this strap being useful also to enable it to be filled from a well or river. It should have, moreover, a cloth strap to fasten it to the waistbelt, and thus keep it steady.

The haversack should be sufficiently large to hold three days' biscuit or bread. It should be waterproof outside, and have an inner coating of linen, which can be taken out and washed from time to time. It should be carried by a linen or canvas strap over the shoulder.

An oil bottle will be required for the rifle. I should like to see this as well as the necessary cleaning kit, &c., carried in a small pan in the butt of the rifle, as is done frequently in sporting rifles. In default of this, it must be carried in one of the pouches.

Lastly, we will consider the other articles which it is thought a Volunteer should possess to fit him for war.

The first of these is the great coat, which should be considered in conjunction with the cape. The real object of a soldier's great coat is to keep him warm, while that of the cape is to keep him dry. An old soldier doing a day's march on a wet day will prefer not to wear his great coat, for he knows that if he does it will add immensely to his labour, and before long the wet will penetrate it, and the result will be that when he arrives at his journey's end he will not have a dry thing to put on. But a soldier under the same circumstances would be glad to wear his cape if it were made sufficiently long to protect his accoutrements, because it would keep him fairly dry and would not hamper his movements.

The remarks that I have already made about material apply with even greater force to the great coat than they do to the tunic.

I am of opinion that the Volunteer should be provided with a great coat of really good woollen material, not too thick, and not coming down below the knee, because thickness and length mean weight. It should have a roll collar which can be turned up when required. It should have straps at the wrists to enable the sleeves to be tightened there, and the skirts should be made to button back, and he should be provided with a cape to be worn either with or without the coat. The cape to be waterproofed, and to reach down as far as the waist. The cape should, I think, be carried by the Volunteer on all parades, rolled and strapped to the waistbelt behind, where it lies in the hollow of the back quite out of the way. On marching order parades when the great coat is fastened to the waistbelt, the cape might be carried "en banderole" over the left shoulder, where it would be in a position for immediate use whenever required.

The Volunteers cannot do better than adopt the old pattern infantry canteen, which is made of just sufficient size to carry a man's messing when vegetables are added. It will cook for two men in the field, so that a man and his comrade have a spare canteen for their tea or water.

If the Volunteers are provided with the hat I have mentioned, which is light and comfortable, they would not require a forage cap. But they should have a woollen night cap for field service, which could be used when convenient in garrisons.

A field "dressing" is supplied to every man before starting for active service. This should be issued to Volunteers when they assemble previous to taking the field.

Every Volunteer should be provided with a small book in which should be recorded his description, service, clothing, payments, &c., in fact, everything concerning his life as a soldier.

The remaining articles which I think he would require, and which could all be carried easily in his waterproof bag, are as follows:—

A second pair of pants.
A second tunic.
A pair of strong shoes.
A pair of canvas gaiters to fit over the shoes.
A hold-all fitted as a house-wife, and containing a fork, spoon, and comb.
A clasp knife and tin opener with lanyard.
Cleaning kit and materials, carried in a small linen bag.
2 pairs of socks.
2 flannel shirts.
2 towels.
A small Testament and Prayer Book, and
4 silk pocket handkerchiefs, which can be used as neck handkerchiefs when required.

When a Volunteer takes the field, the following articles only will probably be taken by him. All the remainder of his kit should be

packed away in his waterproof bag and left at the place of assembly of the regiment or wherever else may be ordered at the time.

Description.	Weight not to exceed. lbs.	ozs.	Remarks, and how carried.
Clothes in wear	12	2	
Accoutrements	4	0	
Arms	10	9	
Ammunition	8	0	60 rounds in pouches and 10 in cartridge holders.
Canteen	1	9	On top of great coat.
Haversack	1	0	By strap over right shoulder.
Water-bottle	0	6	By strap over left shoulder.
Balance of day's rations, say (including tea in water-bottle)	2	0	In canteen, haversack, and water-bottle.
Knife and lanyard, say	0	6	In pocket of tunic.
Field "dressing" with needle and thread	0	2	
Great coat	4	0	Rolled and strapped to waistbelt behind.
Cape	1	0	*En banderole* over left shoulder.
Reserve ration, say	0	12	In canvas bag on belt behind.
Towel and soap	0	8	
Small book	0	2	
Woollen nightcap	0	3	
1 pair socks	0	5	
Grease pot	0	4	In one of the pouches.
Oil-bottle	0	2	
Total weight	47	6	

Everything taken in the above list should be as good as new in the matter of wear.

Additional rations will occasionally have to be taken. When this is the case they will probably consist of biscuit and cheese, and they must be carried in the haversack.

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I have now, in as much detail as is probably necessary, gone through the various articles of personal equipment which I think are required to be in possession of the Volunteers of England to render them fit to take the field. But the question may arise how are all these things to be provided, and who will bear the cost; and I don't feel it right to lay down my pen until I have given *my* answer at least to these questions. It has been, I understand, for some years the custom for the Commanding Officers of the Metropolitan Volunteers to meet together and discuss certain questions concerning the corps they command; and it seems to me that this custom has only got to be extended a little to create a Central Association, which shall consider not only equipment but other matters affecting the Volunteers

throughout the country. No action would of course be taken on the deliberations until the sanction of H.R.H. the Field-Marshal Commanding-in-Chief and the Secretary of State for War had been obtained. The funds to maintain such an Association could be provided by contributions from all corps who were willing to join, and who, in right of their subscription, should be allowed to send a representative to all meetings of the central body.

The business of the Association in the matter of equipment would be to consider what articles should be provided for Volunteers, and what should be the nature of each article. The result of these deliberations might be circulated to all the Volunteer Corps who had joined the Association.

I am aware that it is the opinion of some, if not many, members of the Volunteer Force that the War Department should provide them with all necessary equipment, if not clothes. With this opinion I am at variance. The position originally taken up by the Volunteers was, I believe, that they were entirely independent of Government aid. The feeling that prompted them was that every man, in return for his rights of citizenship, owed some personal service to the State; and that while the poor man could enter the ranks of the Regular Army or the Militia, the well-to-do citizen could enrol himself as a Volunteer, or at least could find funds to enable some one to do so in his stead.

I am aware of the patriotism that influences most members of the existing Volunteer Corps, and I know of the large sacrifices in time and money made by many. Nevertheless, I cannot help expressing it as my opinion that as a matter of principle the Force should never have accepted Government aid except when embodied, and except for the provision of arms and ammunition and drill-grounds.

There is, I believe, no question that when the Volunteer movement was first started the amount of money received was sufficient for all needs. I presume that although *individuals* may give more now the subscriptions are not so *general* as they used to be. Perhaps the reason of this is that the need is not made known. Whatever may be the cause, at all events I would urge a general statement being circulated in districts where the headquarters of Volunteer Corps are established before any further help is asked for from the Government. Should any of those appealed to shrink from their obvious duty as citizens, it may be well to remind them that the ranks of the Militia are far from being full, and that should the Volunteers fall off in numbers or efficiency it is more than probable that sooner or later the ballot will have to be applied in order to obtain men for the first-named force. If the appeals fail to obtain the necessary funds, there will be nothing for it but to go to the Government and say, "We have done all we can; if you wish us to be really efficient you must give us a grant to enable us to provide ourselves with personal equipment."

But in any case each Volunteer corps, under the guidance of the Central Association, should be held responsible for obtaining a *personal* equipment such as I have described; the actual pattern and the manner of purchase being left to local choice.

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I have already stated that the Volunteers have it in their power to do two things to make themselves more ready to take the field than they are at present. They can provide themselves with *personal* equipment and they can obtain instruction in the art of war—and I have described in some detail what their *personal* equipment should consist of.

Before dealing with the second part of the subject—the instruction for war—it may be well to say very briefly what equipment other than personal will have to be provided for such of the Volunteers as may be required to march with the active army. This equipment, as previously stated, is divided into that of the regiment, and that of the brigade or Division. All of it must be provided at a time of need by the Government of the country, and the more carefully the Government consider what are the stores which are absolutely necessary, and where they can best be obtained when wanted, the cheaper and easier will be the eventual process of "mobilization."

It need hardly be said that a battalion of infantry mobilized for war is a very different thing from a peace battalion such as we are accustomed to see at our parades and sham fights. The latter is merely an assemblage of some 500 men, while the former consists of 1,096 men of all ranks, as well as 70 horses and 15 carts and wagons. Of the number of men in a war battalion, it is assumed that when the necessary depôt is formed at the base of operations, 1,000 men will still be available to march forward against the enemy, and for this number regimental transport has to be provided. The description of transport that an army takes into the field varies with the nature of the country in which the campaign is about to take place. Sometimes it consists of wagons, sometimes of *carts*, sometimes of pack animals, and sometimes *even* of boats. Whatever its description, however, the same system holds with regard to the supplies and stores which it carries. Thus ammunition is taken in special carts, or on special mules to the extent of 30 rounds a man. A fixed number of intrenching tools are taken on a cart designed for the purpose, or on mules. One wagon, or a certain number of pack animals, are detailed for headquarters, and the same for every two companies. Two wagons are detailed to carry with the battalion the daily Commissariat supplies, and three wagons the tents if they are ordered to accompany the force.

All wagons, and carts, and batches of mules have certain special articles of equipment told off to them, which they carry independently of any other stores that they may be required to convey with the battalion. The headquarter wagon and the company wagons carry between them one day's *reserve* rations, a blanket per man, the regulated amount of baggage for Officers, and such few books and special tools as it is thought are absolutely necessary in the field.

Similarly, when pack takes the place of wheel transport, a certain number of mules or ponies are detailed to headquarters, and a certain number to each company to take the same stores as would be contained in the wagons.

Each corps in an army, if properly equipped, should have

sufficient regimental transport to take with it similar stores to those which are above named as being taken with a battalion of infantry. Thus a battery of artillery, besides its guns and its special stores of ammunition, tools, books, &c., should take a blanket and a reserve ration per man, and should be provided with a separate cart to carry the daily supply of Commissariat rations. The same with the engineers, in addition to their pontoons and telegraph stores, and their special supply of tools and materials. The same with the Commissariat Corps, in addition to their bakery and butchery columns; and the same with the Medical Staff Corps, in addition to their field hospital and bearer equipment.

The equipment of a brigade or Division consists of that of the various corps of which it is composed, together with such extra equipment as the probable necessities of the campaign suggest.

It would perhaps be sufficient for a campaign in England, where it is presumed the railways would be available to a certain extent for purposes of supply, if the columns that followed the moving army contained only a reserve of ammunition to supplement the regimental reserve, and a reserve of two or three days' rations.

But it is unnecessary to pursue this subject any further here. It was introduced to show how necessary *previous* preparation is, if a country wishes to be in a position to make use of the material she possesses to create a field army.

We will now turn to that portion of the subject which more immediately concerns the Volunteers themselves, and proceed to the inquiry how they can obtain instruction in the art of war.

The answer that naturally suggests itself is, by books—and one wonders why, in these days of much writing and rapid printing, no text-book of instruction for Volunteers has yet appeared. Perhaps the reason is that no one knows how much to extract and how much to omit from the numerous books that have been published in England on the subject of the training of infantry.

I venture to think that it would make the task of preparing a text-book an easier one if the object of military training were kept constantly in view in its compilation—and if everything were omitted that did not conduce to that object.

Evidently the primary object of all military training should be to prepare men for war—and, as the time that Volunteers can give to this training is necessarily limited, it would probably be well if the whole of the time that they can give up to drill were devoted to the primary object.

All the circumstances of war may be comprised under three heads, viz.: the *march*, the *bivouac*, and the *battle*. In each of these circumstances there are two tactical formations, which are technically called "orders," *i.e.*, the close order and the extended order. Thus on the march the troops forming the main body are in what is called column of route, or close order, while those detailed for the protection of the force are in extended order. In the bivouac the soldiers by their camp fires are in close order, while the camp guards and outposts are

in extended order, and in the battle the fighting line whether in attack or defence is in extended order, while the reserves are in close order.

It is frequently stated that a good deal of drill is necessary, not as a preliminary instruction for field movements, but simply as a means by which discipline shall be taught. No one doubts the necessity for discipline in an army. But many think that it may be learned in the home, in the school, and in the workshop, as effectively as in the recruits' squad. Whether this be so or not it is hardly to be denied that it can be acquired by a well-educated middle-class man who devotes himself from motives of patriotism to the profession of arms with greater facility than by the average agricultural labourer who dons the soldier's coat as a means whereby he may earn his daily bread—and I argue that even if drill which has for its object only the teaching of discipline and rendering a man what is called *smart* is considered necessary when the rustic from the plough has to be turned into a soldier of the line, it is not an essential in the case of the Volunteer; all that *he* requires being the drill necessary to train him for war.

The conclusion arrived at is that the Volunteer can obtain instruction in the art of war *first* by the preparation of a text-book extracted from the authorized books of instruction; *secondly*, by practising carefully in the field the manœuvres that the text-book contains; and *thirdly*, by a regulation that no one shall be considered efficient until he has passed through a prescribed course of *practical* training.

I do not propose to describe more in detail than I have done already what the text-book should contain. But I think that it should be as short and simple as possible, and that while it laid down absolute orders for drill movements, it should contain such plain rules for tactical manœuvres that no essential divergence should be possible when two or more battalions practised them together. The book might be divided as follows:—Part I. The Instruction of the Volunteer Recruit. Part II. The Instruction of the Volunteer Soldier. Part III. Miscellaneous.

Part I would comprise all the necessary instruction in marching, shooting, &c., to enable a Volunteer to take his place in the ranks.

Part II would be the school of the company, and would contain all that the great majority of Volunteers would be required to know; and

Part III would contain miscellaneous instruction, such as orders for wearing dress and equipment, orders for railway travelling, details of the annual course of drills, instructions for inspections and reviews, instructions for funerals, &c., and perhaps the few essential movements in the drill of a battalion and a brigade.

If a good book were prepared on the lines above laid down, it would go very far with an intelligent body like the Volunteers to prepare them for practical instruction in the art of war.

The practical instruction itself would be the conclusion of their training. It should be given at every opportunity, on ground provided by the Government, to men who have gone through the whole of the drills contained in Parts I and II.

This subject could be continued at much greater length than has hitherto been attempted, by citing examples of the practical training which it has been suggested should be the invariable wind-up of the Volunteers' book-study and barrack-drill.

But knowing as I do that each example requires careful and continuous study if it is to be useful or even amusing, I have decided that it will be best not to introduce one in this paper.

I have now shortly, but I hope clearly, answered the question with which I started, and explained what in my opinion is required to make the Volunteers fit to take the field.

I have, moreover, indicated how far the business can be done by the Volunteers themselves, and what must be left to be carried out by the Government.

Whether the Government will do their share of the work or not I cannot say, but I feel sure that the Volunteers, who have so nobly initiated themselves as the bulwark of defence of their country, and who have stuck so zealously and persistently to the business, will, as far as they are able, complete the work they have begun: and if what I have said helps in however small a way to bring about such a result, I shall be well content.

Colonel LONSDALE HALE, late R.E.: My friend Colonel Harrison has approached this important question from more than one point of view, but I am glad he has not dwelt too long upon that much-trodden platform, which I may call the greatcoat and equipment platform, of which we have heard a great deal lately. Doubtless greatcoats and equipment are of importance to the Volunteer force collectively and individually, but at the same time it is simply a side issue, because we may be perfectly certain that if the nation were convinced that the Volunteer force, by which I mean the 250,000 efficients, were absolutely efficient in every other respect, it would never stop at the simple matter of supplying them with greatcoats and equipment. If a man has spent nineteen shillings and eleven pence three farthings on an object which he thinks worth a sovereign, he does not think twice over the last farthing. But there appears to be some little scepticism in the mind of the nation as to what the efficiency of the Volunteer force is. Colonel Harrison has boldly stated, in the title of his lecture, that he does not consider the Volunteer force able to take their place in the field, and he has also indicated what that place is; how times have changed since the Volunteer force was originally organized, and how at the present day the part that they would take in the field is changed, and is now twofold; for when the Volunteer force was first organized it was looked upon as a reserve intended to hold garrisons and relieve the rest of the regular Army, but now-a-days, as Colonel Harrison has stated, we shall find not only a large force of Volunteers in reserve, but a large number of them in the front line, where they will have to meet the first shock of invasion, and the question which has to be considered is, Do we honestly and really believe that these 250,000 men are able to meet the first shock of invasion in the front line? Against what? No Power who attempted the invasion of this country would send any one on that desperate and hazardous mission but the flower of her troops, and we may be perfectly sure that if Germany sent a force against this country she would send three or four Army Corps of picked men, picked soldiers. Bearing in mind, then, the imperfect training of our 250,000 Volunteers; bearing in mind their indifferent shooting; bearing in mind the absence of continuity of habits of discipline; bearing in mind the composition of the corps of Volunteer Officers, and remembering whom they would be opposed to, can any one conscientiously say that these 250,000 men as a mass are ready at this moment to take their place in the front line to resist an invasion? Speaking on this point, a Volunteer Officer said to me, "But that does not matter. In six weeks I could

get my battalion as good as any battalion in the line." But we shall not have the six weeks; we cannot rely on the six weeks; we must have our Volunteers, if they are to be ready at all, to be ready at the very moment of attack. Now in answer to the question I have put I quite agree with Colonel Harrison in saying that they are not ready. He makes an assumption, however, from which I differ entirely, that the Volunteers can, by any voluntary effort of their own, make themselves fit for the post in the front line. I am talking now of the whole 250,000 Volunteers. Let us think for a moment what are the opportunities which they have, with the time at their disposal, for making themselves fit. We have the Saturday afternoon drills, which I dare say in the quiet seclusion of the rural districts may be very valuable, but any Commanding Officer who lives near a big town where he has to drill his battalion knows what a small amount of instruction he can put into the time at his disposal amidst the shouting and shrieking of the howling mob around him. Then with regard to the shooting. Have our Volunteers any means whatever at their disposal of getting practice sufficient to enable them to cope with the men I have indicated as landing on these shores—these Germans, who are trained to shoot at 1,000 or 1,200 yards or more—what facilities have our Volunteers of learning to shoot in order to meet on an equal footing men who are trained in that way? We have these so-called "camps of instruction," of which we hear a great deal, and in the hospitality of which many of us have partaken. To an outside observer these Volunteer camps may appear to be so organized that the men come when they like, stay as long as they like, and go away when they like, thus rendering any systematic instruction during the time the battalion is there absolutely impossible. And now I come to speak of what may appear to be a delicate subject, but I have no delicacy in touching upon it at all, the subject of the constitution of the corps of Volunteer Officers. I can only speak of them from what I know of them, of the many friends I have among them. They are men who have been noble and generous enough to open their purses widely, and to give up all the time at their disposal for the benefit of their country. They, perhaps, liked to take to soldiering, but it was in fulfilment of a duty that they took their place at the head of what was really a great national movement. They are men who, like myself, have other occupations, they have their duties in their professions, they have their duties to their families; they have to look after the question of home supplies; and, therefore, you cannot expect a Volunteer Officer to give up more of his time to his military pursuits than that which is left from his other, and, to him, far more important duties. And yet it is an axiom among military men that the weaker, the less-trained your rank and file are, if you want those men to hold their own, and to be well disciplined in the field, the stronger must be your corps of Officers. Never was that shown more clearer than during the war of 1870, when hundreds and thousands of brave Frenchmen were put into the field ready to fight to the last, but with the trained Officer element wanting. Therefore we must have a force of Officers of somewhat better training than the body of the Officers of the 250,000 men. Now, gentlemen, is there any chance of these 250,000 men giving more, either of their time or money, as has been suggested, to the further progress of the Volunteer movement? Remember, the only way in which you can possibly train Reserve forces for the field is to do it in the way it is done abroad. Let us cast aside for once our excessive insular conceit and military self-confidence, and believe that after all foreigners do know something about military training and military affairs. We shall find that they bring their Reserve forces for a series of years, for a month or six weeks at a time, together, and that they officer them most carefully, and then they are able to keep up a well-trained and thoroughly disciplined body of reserve troops, ready if need be to act in the front line. Until we have our Reserve forces going in this way into camps for several weeks at a time for four or five years in succession, and properly officered, we shall never be able to have Reserve troops of the required standard. But can you expect 250,000 men to do that? I emphatically say you cannot. You cannot ask these 250,000 men to meet the demands on their time which are required, and I do not see why you should ask them for more money; but is it not possible that out of that great force of 250,000 men, bearing in mind

the double duty which, as Colonel Harrison indicated, Volunteers would have to perform, the Reserve duty which they have at present, and their position in the front line, would it not be possible to further yet the principle of volunteering and ask whether among that 250,000 men there is one-tenth part of them—a corps of 25,000 men—who would be willing simply to give up more time to their country? Would it not be possible to get among the young men of England 25,000 men who will say—"Yes, we will engage for the next four or five years regularly for a month or six weeks in the year to come into a camp and undergo the severest training, in order to make ourselves fit for the defence of the country as 'Volunteers of the Line'"? Then extend that to the Officers. Go among the regular Officers and say, "Will any of you volunteer to belong to that corps?" Many men would if the expenses were decreased, and then you would be able to officer your corps with as strong an infusion of the Regular element as of the Volunteer element. I imagine if a corps of that class were formed, you would have within a very few years a corps of 25,000 very fairly trained men to which it would be a man's greatest pride to belong, and they would be the "Volunteers of the Line." It would not interfere in the slightest degree with the reserve Volunteers, who would be as they are now, and the Government would be able to lay its hand upon a body of 25,000 English Volunteers who would be also 25,000 English trained soldiers. Gentlemen, I ask you whether the time has not come when the Government of this country should not make a fresh bargain with the Volunteer force. When it was first originated the Volunteers came forward to the Government and said, "Here, gratuitously, we give you our services," and the Government accepted them. By degrees the servant found his services becoming more valuable, and he comes to his master and says, "Now you must pay me in kind and in money." The master agreed for a time. The servant became still more efficient, and now master and servant are at a deadlock. The servant says he can become more efficient yet, but he wants more payment, and the master says, "In the first place I cannot afford to pay all you 250,000 men, and in the next place should I accept you on your terms you must do me more duty." Well, let us strike a fresh bargain. Let the Government say to the Volunteers, or to the 25,000 men, "We merely want your time; we will relieve you of every single expense, we will even pay you while you are in camp, because we know what a cheap force you will be when we have really trained you." Let us make this distinction between the "Volunteers of the Line" and the "Volunteers of the Reserve," instead of trying to deal with this huge, almost unmanageable, question of equipping and training 250,000 Volunteer soldiers, let us begin by dealing with 25,000 only. We have heard from the lips of a dead hero that we ought not to study minor tactics, but read Plutarch's "Lives," because there we shall find how men died for their country. We have got 250,000 men in the Volunteers who are ready to die for their country. Now we want to get from that number the pick of them, the 25,000 men who are not merely ready to die for their country, but ready to spend their lives in its service also.

Colonel DAVIES, Assistant-Adjutant and Quartermaster-General Southern Division: I am sure not only the Volunteers but probably a great many Officers of the regular Army, who take a great interest in the Volunteer movement, will be deeply indebted to my friend Colonel Harrison for the interesting paper he has read to us, and for bringing this important question forward. I hope, as I belong to the latter class, that I may be allowed to say a few words. Sir George Willis has begged me to express his very great regret that he is not able to attend on this occasion to take part in the discussion of a subject in which he is so deeply interested as the question of the organization of Volunteers. With regard to the transport, it is a matter on which I should like to say a few words. At the beginning of this year, Sir George Willis, being desirable that, if possible, the Volunteers in the Southern District should be quite independent as far as transport was concerned, desired me to issue a memorandum pointing out that it was very desirable that they should be perfectly independent of the Government in regard to transport in the case of mobilization, because, if they were mobilized, probably all the military transport would be taken by the regular Army, and they would be obliged to scramble for what they could get with the Militia—for any extra trans-

port not required for the Army. It then goes on to point out what he considered might be necessary, and hoped it might be obtained with little or no expense to the Volunteers. It pointed out that if a battalion was about 800 strong, it would probably want three ammunition carts, and it suggested that these might be got from butchers, bakers, and others who had covered carts, which would make very good ammunition carts with two horses, one hooked in front, which might be used as a pack animal to carry the ammunition where the carts could not go. There should also be another cart with one horse for the intrenching tools, and eight wagons to carry the baggage and provisions, each with two horses; and for this purpose it suggested that carriers' vans might be used. This I dare say seems a very small number of horses, but the transport would not have to move any great distance, and only on good roads such as we have in this country. Therefore, they need not be horsed in the same proportion in which we find wagons are horsed for field services in other countries. With regard to ambulance, it suggested that they might utilize omnibuses and cabs; and it also suggested to the Commanding Officers of the Southern District that they might ask owners of this sort of transport if they would not show the same patriotism as was shown by the other members of the Volunteer force, and come forward and furnish their wagons at a regulated price, and that they should be asked to come out in the case of camps of instruction and, on a few occasions, for marches. If this was done, Sir George thought that the War Office might very properly be asked to allow the owners and drivers of these transports to become members and earn the capitation grant; and also that if the Volunteers organized this transport it would be quite fair to ask the War Office to supply camp equipments—tools, greatcoats, water-bottles, &c., for the Volunteers. Nearly all the Commanding Officers in the Southern District acquiesced in it and promised to do their best to work it out, especially Colonel Everett, Colonel Stuart, and Sir William Humphery. Afterwards it was considered that it should be brought forward, if possible, by the Officers commanding the Volunteer corps generally, as they were much in favour of it. Sir George Willis asked some of them to put forward a scheme, which they did, and I will just read a few notes which I have taken from that scheme. Colonel Stuart foresaw little difficulty in organizing such a transport as was suggested by Sir George Willis. At the same time he thought it would be rather difficult to get carts for ammunition, &c., strong enough for the work. Colonel Everett immediately asked permission to organize this transport. He proposed that there should be a payment made of 5*s.* a day for each horse employed, and he made out that the expense would come to 54*l.* 10*s.* for the three days which he proposed to use them during his encampment. I do not know whether he is here to-day or not, but first of all he has made an error in figures of 11*l.*, and in the next place he asked for 58 horses instead of 29; therefore, according to Sir George Willis's scheme, if he paid 5*s.* for a horse, it would only come to 21*l.* 15*s.*, and if there was a capitation of 30*s.* for each man, that would be 22*l.* 10*s.* Sir George Willis is particularly anxious that in any scheme for transport, very little expense should be thrown on to the Volunteer corps. He wishes to get people to come forward and furnish the transport at a moderate rate. Sir William Humphery has taken it up still more keenly. He immediately asked permission to organize and use this transport in his camp at Ovington Park, Winchester, on the 25th of this month. He asked also whether a capitation grant could be given, but of course it was needless to say that it could not be given this year. I am happy to say, however, that Sir William Humphery, with his usual liberality, has determined that he will have the transport this year at his own expense, and therefore at his camp he intends to have all this transport for his battalion. I am quite sure that any gentleman who takes an interest in this subject has only to go down there, and Sir William Humphery will be pleased to show what he has done. It has been taken up so much by Commanding Officers of the Southern District, that I am sanguine enough to hope that next year all the corps in the district will have got transport, and with very little expense to the Volunteers. I should like to say one word on the question of drill. Colonel Harrison says something about drill, and he rather led one to believe that there was too much drill, and that Volunteers could make themselves efficient with little or no drill. There I entirely differ from him. I think they must have a certain amount of

drill like other men, though they do not want the same drill as the ordinary soldier. If he alludes to marching past, I think Officers may waste too much time in trying to make their men march past well; but it is imperatively necessary that they should have a certain amount of close-order drill, and very careful drill in extended order. If anybody thinks men can fight in extended order without very careful drill, he is very much mistaken. I maintain that we want more drill in this than they used to have in the old days, when you might have a number of inefficient men in the battalion who did not know their drill, and they would be carried along with the others who did know their drill; but now each individual man must be drilled, and if you do not teach each man to keep his proper distance and direction in extended order if they are fighting with a large body of men, I am sure they will get into hopeless confusion. Therefore I think they want a good deal of drill. They want a good deal of drill, too, in outpost duty, and I hope that the Commanding Officers of Volunteers will turn their attention to this very important matter, which has not been taken up very much at present. I hope that no mischievous doctrine will get abroad that people now-a-days do not require drill because we fight in extended order.

Colonel RIDGWAY: The subject of the present paper by Colonel Harrison purports to be confined wholly to "What the Volunteers of England can do to render themselves fit to take the Field;" therefore, it is entirely beside the question for us to enter into the matter of their equipment or of any proposed changes, whether local or otherwise, in their dress. That disposes at once of the greatcoat and water-bottle question. What the Volunteers themselves can do to render the force effective in the field appears to me to be a matter of sufficient importance in itself to cause us in the present discussion to confine ourselves to that point. The action a Volunteer can take is two-fold: first as a soldier, and secondly as a civilian. As a soldier, his duty is plain and simple. It is not to propose or invent according to his own crotchets new systems of dress, new systems of equipment, or new systems of drill and discipline, but simply to learn and do his duty as a soldier and to obey the orders of his superior Officers. With reference to the remarks of the last speaker, I may be permitted to point out that Colonel Harrison's expressions did not refer to a considerable amount of drill being unnecessary, but that it was unnecessary to have such a large amount of discipline, which drill was mainly intended to produce. On the other hand, it does seem to me that it is the great aspiration, as well as the duty of the Volunteer, to acquire strict habits of discipline, and in that as well as in every other way to make himself, as far as possible, as like the regular Service as can be. Even in his equipment and drill and headgear he must seek to make himself efficient in the Regulation Articles, and I doubt very much whether it would be for his advantage that he should have a soft hat looped up at one side and ornamented with a feather, unless it should be decided by the authorities that this was the best headgear for the regular Service also. The time has gone by when the Volunteer wished to dress in fancy gear. He is desirous now simply to do his duty, and he is willing to do that duty without stint of labour or zeal; but I think the line of what is to be expected from him should be drawn at the point where it would be necessary for men such as the Volunteers are now composed of—viz., working men, to put their hands in their pockets to eke out the bare capitation grant. I am sure that in all branches of the Service it will be found that where the capitation grant is from favourable circumstances found sufficient, there the Volunteer Service is efficient, and that where the capitation grant is not sufficient for all demands, there it will to a certain degree pine and languish unless it is supplemented by other means. Nothing, however, can be more certain than the fact, that no reliance can now be placed upon voluntary contributions; these have entirely gone by. And upon this point I feel bound to insist, because local support and action appear to be the most salient point in Colonel Harrison's remarks. He seems to think we should go back to the time (which is in my recollection) when volunteering was a matter of private subscription and amateur soldiering, and when Officers and even the Adjutant were elected by the men. I remember well a country lawyer, a very excellent man in private life, being selected as an Adjutant, and the men selected their own clothing and their own form of weapon, and organized matters very much in their own way.

In the present day this is not the model of what ought to be; the most prosperous, the largest, and most efficient corps are not in any way of a pedantic character, but are simply found working according to the lines of the regular Service, and endeavouring to show themselves in drill, in discipline, in personnel, and in material as much like the regular Service as they possibly can. Now as to the other point, the way in which a Volunteer can as a civilian aid in rendering the force capable of taking the field. Although as a soldier he is precluded from teaching the authorities how to improve his own equipment or drill, he has, in his civilian capacity, the opportunity of influencing public opinion, and the action of Parliament in order to induce a much more liberal treatment of the Volunteers in matters of finance, and a much easier treatment of them in regard to many minor details. And while the Volunteer has the freedom of the civilian to act in this way, he also has the advantage, to a certain degree, of military information and experience to guide his action, from his acquaintance with military requirements and of the changes of opinion among civilians on military matters. He knows well, for instance, that the bugbear of the Militia ballot is simply a bugbear, and is aware that perhaps the most important means whereby Volunteers may be fitted to take the field, and a large increase of that force as well as of the Militia may be obtained, is to prevent any more annual Acts of Parliament suspending the Militia ballot. If the Militia Ballot Act were allowed to take its course, the Volunteer ranks would be immediately filled with men doubly interested in fitting themselves for service, while it would also secure the filling up of the ranks of the Militia by ballot. But at the best, the Volunteer, whether as civilian or soldier, can do but little more than he does with his present means to enable himself to take the field. The Government can of course do a great deal more, and it is for them to consider what he is to take the field with, and how he is to keep it. The subject deserves to be considered as something more than one of Volunteer infantry only. There is no zealous and honest artillery Officer of the regular Service who will not say that the brigades of Volunteer artillery are perfectly fit to man our forts and coast batteries, and to do thoroughly good service as trained artillerymen. As far as the artillery Volunteers are concerned, they have been, by their organization, their zeal, and the peculiar nature of their drill, enabled to become more perfect than might have been expected from auxiliary soldiers. It is not exactly the same with the Volunteer infantry, whose duties are not so specific. If you have 250,000 Volunteer infantry you may send them into the field to-morrow, thoroughly equipped with greatcoats, water bottles, and all the paraphernalia which you choose to set down in an article as showing what they ought to be fitted with, but if you send those men into the field without a proper proportion of cavalry and field artillery, transport, and commissariat, you may just as well keep them at home. However much a Volunteer may do to render himself fit to take the field, it will be useless, unless the cavalry and field artillery of our regular Service are very largely increased. It would seem, therefore, if this be the case, that it be the duty of the Government to fit them in this respect, for it cannot be the act of the Volunteers themselves. In the meantime, so far as the Volunteers can fit themselves by their own action for taking the field they are progressing very satisfactorily; and the only means by which they can be expected to increase the pace at which they are now going will be by increasing the capitation grant where required.

Major the Hon. SCOTT NAPIER: I consider that, as at present constituted, the Volunteer force, although an excellent school for training and discipline, a loyal and generously constituted force, is absolutely and utterly incompetent to carry out what General Hamley and several other gentlemen have allotted to it—that is to say, the defence of our coast against organized invasion. How can anybody in his senses, after examining the question coolly, believe that these 200,000 men would be forthcoming in time of need? How can we believe that regiments recruited from dockyards and arsenals, telegraph, railway officials, and post-office officials will suddenly be liberated to go into the field and desert their employment? Such disorganization is impossible to my mind. I think a Saturday afternoon, at a quarter before six o'clock, is, perhaps, the only time when such an idea could be realized. Now, as regards the subject of equipment, I think it is one of the most important subjects in connection with the soldier, for on service a man is absolutely helpless if he has

not got a proper means for carrying his ammunition and accoutrements. At the same time I think it would be utter waste of money and an unnecessary waste of energy to go into the question of equipping an army, a large proportion of which is not to be relied on for efficient service. Again allowing the possibility of mobilizing the Volunteers as an organized body, are they, taking them as a body, the men with whom you would confront the veterans of the German Army? This is another absurdity which ought to be banished from any calculation as regards the defence of this country. Not a word would I like to say against the Volunteers; they are doing their best, and they are doing useful work. It is a loyal, conservative, and manly institution, and long may it live and prosper! But were I a military authority, making my calculation of the force at my disposal, I should not count on any one regiment that I know of in the Volunteer force as a complete unit. I should merely count on so much mixed material having been created, which might be made use of in case of ballot for the Militia, or in case of a general conscription. So far as that goes, the Volunteer movement and its system of training are excellent in their way. When Colonel Harrison says: "Let us consider what the Volunteer can do for himself," I say that he is willing to do more than he is allowed to do. He is very ready to shoot; there are hundreds of Volunteers who have been ready to shoot all through last summer, when the Wormwood Scrubs ranges were closed. They are very ready to drill. There is no proper place in London for them to drill in. Colonel Harrison talks about the Government supplying Volunteers with open ground to drill on. He may not be aware that 90 per cent. of the drilling done by the Volunteers is done under cover and by gaslight, for there are only dark hours available for Volunteers during winter. Colonel Harrison should draw a distinction between a man being paid for his services, and a man being given facilities for carrying out services that he offers gratuitously. Colonel Harrison infers that it would be contrary to the spirit of the Volunteer movement were Volunteers to accept money for accoutrements and arms. This morning, a Volunteer, one of the best shots in England, came to me, and said he would be very glad to shoot for the Queen's Prize, but he was an artizan, and he could not afford to buy a pair of regimental trousers, required by regulation. A brother Volunteer immediately lent him a pair. This shows that there are men who are willing to give services and time, but who are not able to pay for their necessaries and equipment. I consider that the accoutrements should be supplied gratuitously by the Government, if not the uniform; that every facility should be given to the Volunteer to practise with his rifle, and to drill, and then you might perhaps say, "What will the Volunteer do for himself?" Until then the question is, "What will the Government do for the Volunteer?" I think the best way in which we can realize the number of Volunteers on whom we could really lay our hands in the time of war, and with whom we could confront the invader, whether French or German, would be for the Government to offer an additional capitation grant for those men who are prepared to sign a contract, binding themselves to appear when called upon to do garrison duty, and also to attain certain higher standards of efficiency in shooting and drill. Then, if that extra capitation was granted, 20 per cent. of the present number might be made thoroughly efficient, and you would be able to realize your force by grouping these reliable men in companies, equipped, and organizing separately from the rest of their corps. I think it would be an invidious thing to have two separate Volunteer forces, it would not be popular; but let there be one or two companies in the regiment, composed of men of the same regiment, who have bound themselves to turn out efficient for a certain number of years, who have passed the first class in shooting, who are prepared to sacrifice themselves for the sake of their country, then we should know a great deal more than we do know now. I must apologize for the imperfect way in which I have given vent to my feelings on this question, but having had four years' experience of the Volunteers I do not think I should set my faith in the Volunteer force as it now appears on paper. I believe you might really get a dozen regiments that would turn out very well, but it would be impossible to count upon the great majority.

Colonel HOPE, *V.C.*: I find myself obliged to differ from almost everyone—from Colonel Harrison and everybody else—except Colonel Ridgway; and before I touch on any other point I wish to express my difference with Colonel Lonsdale

Hale in the strongest possible manner. It is perhaps hardly a case for *ex uno disce omnes*, and my experience is limited, more or less, to the men I have commanded, and I may possibly be more fortunate in those I have commanded; but all I can say is, that I command the largest corps of any kind in the whole Metropolis, namely, the City of London Artillery of 16 batteries; and that corps I unhesitatingly state is, as a matter of fact, ready and fit to take the field to-morrow. When I say "take the field," we cannot take the field because we have no guns to take the field with, but we are ready and fit to go to work if they give us guns —we are ready to man the coast batteries, and the men are thoroughly efficient gunners in every sense of the word. Many of my own commissioned Officers have had 10, 12, or 15 years' service, and they are in every respect as good as the non-commissioned officers of the Royal Artillery. There are many gentlemen present to whom I am not known, therefore I may mention that I was a year in the Crimea—a great part of the time under artillery fire, and I know what that means. I say that my men—and I think I can also speak of the 2nd and 3rd Middlesex Artillery—are ready and fit to-morrow to defend the coast with any guns that may be given to them to defend the coast with. It is true there are no guns in the country—but that is not the fault of the Volunteers, and that is not the fault of the military authorities, that is the fault of the House of Commons and of the party politicians, who are the curse of this country—who will not go to the House of Commons and tell the truth and ask for the money that the country does not grudge. Neither the country nor the House of Commons ever grudges the money if the case be fairly put before them, and it is explained to them that the money is *bonâ fide* required for the defence of the country. But the party politicians cry "Peace, peace!" where there is no peace—or at least where there are no guns. I saw the other day someone was kind enough to suggest that as the original Armstrong field pieces were now wholly useless they might be turned over to the Volunteers. I altogether protest against those guns being handed over to the Volunteers. If we ever meet any troops at all it will be, as Colonel Lonsdale Hale well put it, the finest troops in Europe, and the finest artillery in Europe, and we ought to be given the best guns that the richest country in the world can produce. At present the Volunteer Artillery are armed with Snider carbines. I think that is a mistake —"Penny wise and pound foolish." Now, Sir, with regard to the subject of dress, which was the first point in the paper; many of Colonel Harrison's suggestions for useful dress in time of war I think are exceedingly good, but I think it would be a fatal mistake to dress Volunteers in any dress that could be distinguished at a great distance from the regular Army. It would expose them to very great disadvantage. They cannot be too alike in general appearance to the regular Army. If there are good equipments, let them be given to the regular Army and not to Volunteers only. Then as to the question of funds. I formerly commanded the 1st Surrey Artillery, and I now command the City of London, and, therefore, I have a double experience, and when I had the honour of being appointed to command the 1st Surrey I sent out a circular in the form of a begging letter to the Lord-Lieutenant, and all the magistrates, and everybody we could think of or hear of. That circular produced 10*l*. When I was appointed to command the City of London I sent out a similar letter, and that, I am glad to say, produced a little more. The Merchant Taylors' Company and the Drapers' Company, I think, each gave us 10*l*. 10*s*. a year for prizes, and I think somebody else gives us 5*l*. 5*s*. That is the extent of the assistance which the largest corps in the whole Metropolis, comprising 16 batteries and 1,200 men, receives from the richest city in the world. But I do not see why private persons should be expected to contribute to the national defence, and if I seconded the amendment of Captain Price, R.N., the other day at Willis's Rooms, at a meeting where it was proposed to get up a subscription fund for the Navy, it was because I think it is the duty of party politicians to incur the odium of asking for the money which is necessary for the defence of the country. It would not take so very much for the Volunteers. Even 10*s*. a year might, perhaps, be sufficient, in addition to what we now receive; certainly 15*s*. or 20*s*. would be sufficient. We ought to have uniforms and a certain amount of equipment, greatcoat and gaiters given by the country. As regards transport, I think that might be left in abeyance, because in this country there are so many

horses and so many vehicles of one kind and another for the limited area of the country, and so many bridges and railways and appliances of civilization, that we do not require the same sort of equipment that is required by the Reserve forces in many other countries. I agree with Major Napier to a certain extent, but when he says that the 250,000 men are not available, I think he and Colonel Lonsdale Hale both forget that after all these men are *enlisted* and are *bound* to come out, at whatever inconvenience, in case of invasion. But I certainly agree with Major Napier that such a corps as an artillery or rifle corps of the Arsenal is an absurdity, because those men employed in the Arsenal certainly could not go out in case of invasion. There are several corps of the same kind that I think might be usefully suppressed, and the money now expended upon them saved to the country. Similarly—I am afraid Colonel Harrison may perhaps disagree with me there—I regard the Volunteer Engineers as a waste of money. This country has more engineers, more contractors, more gangers, more navvies, more fitters than all the rest of Europe put together, and if a railway bridge were suddenly to break down I fancy that a railway contractor would repair it more quickly than an Officer of the Royal Engineers. I really think these 10,000 military engineers in this country are a waste of money. They are taught all kinds of military engineering work—making fortifications, pontoon bridges, and all that sort of thing; but such work as this, in my judgment, would not be required in this country in case of invasion, and therefore it is a waste of money. There are plenty of Engineer Officers and Staff Officers who could direct the engineers, contractors, gangers, and navvies to whom I have alluded, in the throwing up of anything resembling a permanent fortification, and for hasty work, the infantry and artillery might be trusted to make those protections for themselves. When Colonel Harrison says the Volunteers have it in their power to provide themselves with personal equipment, I can assure him that is not so. He evidently is under the belief that a large proportion, if not the majority, of the Volunteers at the present day are composed of these well-to-do middle classes who no doubt formed a large proportion of the first Volunteers. That certainly is not so in my own corps; it is a very small proportion indeed of middle-class men who are in the ranks. The vast majority—80 or 90 per cent.—are artizans and shopmen—men whose average earnings I should think do not exceed a couple of pounds a week, and therefore it is impossible to expect them, in addition to giving up their time, also to supplement the grant which the rich country whom they serve thinks enough for its soldiers. As regards the amount of drill that Volunteers go through—speaking again of my own corps—it is not an uncommon thing for a man to put in 100 drills in the year, and when you find that that man has done so for perhaps half-a-dozen years continuously, it is impossible to doubt that that man is an efficient soldier. This year, for instance, I went to Dover with my corps, and took 646 men—a large number—some of whom were there for a week, some a day over a week, and no one less than three or four days. They carried out their garrison duties exactly as if they had belonged to the Royal Artillery. With regard to Officers I agree entirely with the statement that you can hardly have Officers too good for the auxiliary forces; but where are they to come from? We must do the best we can with the men we have got; and although certainly some of my Officers are not just what I could wish, I have others who are exceedingly good, and a certain portion have passed through the School of Gunnery. I have just tried the experiment of writing a memorandum for the information of the junior Officers, to the effect that I would not again recommend any Officer for promotion to the command of a battery who had not passed through the School of Gunnery at Woolwich, and I am delighted to say, so far from that being taken ill, it has been taken very well indeed. And when you consider that that gives a month's training to a certain extent in the theory, and still more in the practice, of artillery, I think it is impossible to doubt that a man who has passed through the School of Gunnery, and also has served some years in camps of instruction and so forth, is reasonably fitted for his duty.

Colonel HOWARD VINCENT: The hour is late, and I should therefore only like to add my assurance to Colonel Harrison's, that no further assistance towards the Volunteers can be now obtained from the public than is obtained. I think there is hardly a Volunteer Commanding Officer who has not already anticipated his

suggestion that a general statement should be made to the inhabitants of a district in which their headquarters are situated. I may mention it as a matter of fact I did so myself within a very few weeks, and in response to fifteen letters of appeal to very wealthy persons the net result was a subscription of five guineas. I am afraid that is not a very encouraging thing to lead us to expect anything more. The title of this paper, for which I am sure Volunteer Officers are much obliged to Colonel Harrison, is "What can the Volunteers of England do to render themselves fit to take the Field?" I would venture respectfully to say I think they can do exceedingly little without further assistance on the part of the Government. The Government at the present moment gives us no drill grounds, no rifle ranges, and although we have facility, as far as funds are available, afforded us, still we cannot get on as we are at present. I can but express my individual hope, and I feel sure it is shared by many Officers here, that the Government now in power may do what their predecessors did in 1878, and grant a Departmental Commission of Inquiry into the needs of the Volunteer forces.

Captain TODD: I think what we want at the very first outset, in order to assist the Volunteer service to take the field, is not so much personal equipment, because we could go in any overcoats that the men had if it were necessary, but that we should most certainly not be fitted out with guns that are obsolete. We have carbines, as you know, that are obsolete, whilst the infantry have the Martini-Henry. Our men practise nearly three nights a week, each battery having their own Morris tubes fitted up in the drill sheds, and they do the best they can with their Snider carbines. How can they do more without the Government assisting them by giving them the very best weapon invented, and providing them with ranges for practice? There are nearly a thousand efficients in our brigade, and I will undertake that any Royal Artillery Officer having seen those men at Shoeburyness or elsewhere, will say that they are fit to go anywhere and do anything if you only give them the proper guns to do it with. I am sure the camp at Shoeburyness will be found well worth a visit by Officers of every branch of the regular Service, who have made remarks with regard to the want of discipline in the Volunteer forces. There is not a man in our brigade who could not be put on the field to-morrow if they were properly equipped, and had proper guns to go with. We will not have a paper man in the regiment. I have not a single paper man in my battery, and I do not know a single brother Officer who has a paper man in his battery. But why is this the present state of our corps? It is because we are schoolmen. We go to Woolwich and to Shoeburyness to study under the best masters and with the latest weapons for two months. We are not satisfied even with our own artillery studies and drill. We also go to the Guards for six weeks, and we go before the Board of Officers for our infantry certificate, and those who want to go into our mounted work with 40-pounders (we have no field batteries, our guns having been taken away from us on the ground that we did not understand horses, and, as one of our opponents said, the Volunteer Officers could not ride a horse two days without a sore back) must also go to the Cavalry School for their riding certificate. We must have great self-denial to put up with what we have done for the last twenty-six years in the Volunteer force, and for my own part I believe I am stronger in feeling in favour of the force now than I ever was in my life. We have gone through good report and evil report, but no man cares for the evil report if he knows that he is right himself and knows his work. But we feel this, that it is no use spending our valuable time, and we must spend a considerable amount of money, unless we are supported by the Government of the country. I blame the public. I do not blame the military authorities one bit; they have to look after their own branch of the Army. We must have certain expenses. But what I say is that our regular Army, more particularly the mounted branches, are not one-tenth of the number they ought to be considering our large possessions in all parts of the globe. I consider that the Volunteers must be trained properly, but of all things they must be armed and practised with the very best weapons in existence; they will be able alone by proper organization and equipment to defend the country without the aid of a single regular except the Staff. The Volunteers were first started about twenty-six years ago. I know one case in which a publican was elected as Officer in a regiment, because in those days an Officer might be elected by a certain number of men if he

were a jolly good fellow, and was ready to spend any amount of money, but the result was there was a great want of discipline. Now the Officers are a very different class of men; you have men who go into the work for the love of it, for their love of country, as patriots, and will study thoroughly the arts and science of war, and we have not got men with pipes in their mouths, who march about the streets wanting in discipline and dressed half military and half civilian. They have been trained for years by their Officers and sergeant instructors from the best military schools of the country, and if there is any truth in the report of the Inspectors we certainly ought to be able to go anywhere and do anything, and if we are not, then wipe us out of existence altogether. Do not have a paper man in the Service. You talk about 250,000 men; why, we ought to have millions of men. I believe every man in the United Kingdom should be prepared to defend his country, not by simply saying so, but by doing it. Any fellow can say, "I am prepared to go to-morrow to defend my country." He is simply an idiot, who would only be in the way. We want fighting men—men who will study how to fight, and the science of war. It is something like a man who says, "Oh, I have no need to learn the use of the gloves; should I be attacked I am strong, and can tackle any man." He finds his mistake out when he quarrels with and fights a man who is trained to their use, by getting a threshing at the hands of a scientific boxer. We are simply learning to use the gloves for self-defence, and learning the science of war, and we want to be supported in that. If you do not give us the weapons to work with, what is the use of our going to the School of Gunnery, Infantry, &c., and studying with all those improved breech- and muzzle-loading guns of the newest patterns if we are not to have the guns ourselves? This last year we were served out with 20-pounders for the review and sham fight at Brighton. Now when we get before the enemy the 20-pounder is an obsolete gun, and there is no shrapnel shell manufactured for it. We concluded at once that the Government were going to give us this gun for service against the enemy; we must teach our men that there would be shrapnel shell, so we ordered them to fire as with shrapnel. We have not these guns; they were lent for the day, and returned to Woolwich. What I would say is this—never mind about greatcoats, because they can easily be obtained, but do let us be practised beforehand with field artillery, and give our men the Martini-Henry carbine. You cannot do without field artillery any more than you can do without cavalry; you cannot fight a battle without every branch of the force being properly represented, but at the present moment we are actually without cavalry and without field artillery, and when you say, as many people have said, that not only are the Volunteers inefficient, but they are also useless, and that the Yeomanry Cavalry are also useless and inefficient, it turns out after all that the reason is that their shooting irons are bad, and that they have no ranges to practise upon. The Government neglect their own Household Cavalry, for the 1st Life Guards have no ranges to shoot at. Can we therefore be surprised at the Volunteer Army being neglected? I cannot imagine how it is that the public are such fools as not to agitate on the hustings and everywhere else that a proper force should be kept up in order to defend the country, and that it should be provided with the very best weapons, and be in a state of the best possible discipline, and ready to take the field without the slightest delay.

Colonel Lord RANELAGH: It is too late to discuss any matters other than that which we have really got before us, and what I shall say will be simply half a dozen words. In the first place, I am glad to take this opportunity of thanking Colonel Harrison for his practical suggestions. In these lectures we generally hear a great many complaints, but very seldom any remedy. Colonel Harrison has put before us his practical ideas of the equipment of a soldier, and I agree with him in most of them. We have already heard an allusion to the top-hat: I think that is a mistake; the Glengarry cap is a soft cap and very much more comfortable to sleep in. The only thing I was going to say is this: I am constantly hearing of the painful state in which we are with regard to the organization of the Army. Twenty-two or twenty-three years ago I wrote a letter stating that the Volunteer force was a sham. That letter was taken most ungenerously, and I was abused in every direction. What I said was fact, and I say it again now. The Volunteer force is as fine a force as any body in Europe,—there is not a finer body of men nor

men more amenable to control, but that is all you have got. You have no organization. I say it is a disgrace to this country that we have not got into a state of organization, so that we can put our hand upon these 250,000 men and march them I won't say in twenty-four hours, but in a very short time, to any part of this country. I will now offer a practical suggestion, which perhaps some gentlemen will think of some day. We have on the diagram before us a statement that there are 50,000 agricultural horses in England, and altogether 70,000 horses that might be available at any moment. All that is necessary is that they should be organized, and I know of no man more fitted to undertake that task than my friend in the chair. I can see no difficulty in making your Lords-Lieutenant of counties a kind of district basis for this purpose. There you might have everything prepared for the central Staff. Every county should have at the office of the Lord-Lieutenant an account of the horses and men there, and in that way you might, in course of time, be enabled to get an estimate of your forces, and hope to mass your men together.

Admiral BOYS: Although I am an Admiral in the Navy, I think I may claim the privilege of offering a few remarks, as I am probably the oldest Volunteer Officer in this room. I was one of those who gave their time and energies to the organization of the Volunteer force in the year 1860. In those days, we gave our services, and we gave our money, we had to pay for everything. It was owing to the Report of the Royal Commission that sat in 1862 that the present capitation grant was given by the Government. I do not quite agree with what Colonel Lonsdale Hale has said that at the commencement of the movement we gave our services as servants to our master, and that as we got more valuable we demanded more and more wages. The fact was simply this, I may instance the corps to which I belonged as a representative one. It was a small country one, fairly drilled and disciplined. We paid for everything ourselves by raising all the subscriptions from the neighbourhood that we could, and we went on very well for two or three years, but then the money dropped off, and we positively could not get on without more assistance. Had it not been for this capitation grant, the efficient battery of artillery Volunteers to which I refer, and which I believe exists now, would have died out altogether. I cannot myself agree that the Volunteers can get on without an increased capitation grant. Many hundreds and thousands give their time, and they have not got money to give. I do not understand the argument of the Officer who said that many Volunteers if they were called out would give notice of leaving their corps, because they had certain business occupations. In my day I know there was an Act of Parliament by which, when the Volunteer was called out, there was no seven or fourteen days' notice, he simply must go, or he would be a deserter.

The CHAIRMAN: That is the case now.

Admiral BOYS: I do not think under any circumstances the Volunteers would give notice when called out for service; their comrades would despise them if they did so. I have only one more remark to make, and that is with reference to raising subscriptions for the defence of our ports by purchasing torpedo-boats. I heard part of the debate to which reference has been made by Colonel Hope; he seconded an amendment, and I held up my hand in its favour. I believe it would be an absurdity to ask the country to subscribe to purchase torpedo-boats for the defence of our home ports. In the first place, the torpedo-boat is not the best defence for a mercantile port; and in the next place, I believe, in no case should the public be called upon to subscribe for the material for this purpose. I quite believe that if the wants of the Services, the Army, Navy, and Volunteers, are properly put before the House of Commons, and before the public, they will authorize the Government to expend any amount of money to provide the necessary defences of the country. I perfectly agree in raising public subscription to add to the efficiency of the Volunteers in personal equipment and other necessary expenses, but I am strongly of opinion they require a great deal more assistance from the Government than they get at present.

Lieutenant-Colonel ROUTLEDGE: I am sure every one here must have listened to the lecture with very great pleasure; as far as I am able to judge the equipment shown to us is the very best and most easily carried that I have ever seen, and the suggestion that the kit bags should be carried in carts is a very good one. I take this opportunity of protesting very strongly about the way in which the Volun-

teers have been spoken of by one or two Officers. I don't doubt that Colonel Lonsdale Hale and Major Napier were simply saying what they thought, but at the same time I think they very greatly under-estimated the value of the Volunteers. We know that we have 250,000 Volunteers on paper. Out of these 250,000 probably something like 240,000 have been seen by inspecting Officers, and the inspecting Officers' reports in most cases are that they are an efficient body of men. Major Napier says we should get no men out at all if we wanted them; now I have it on the best authority from an Officer of the highest rank, who feels sure that if the War Office were to call on Volunteers to volunteer for active service anywhere, it would get at least 30,000 men, at a very few days' notice. As to their not coming out in case of invasion, they would have to come, the Volunteer Act provides for that, and as one speaker very properly said those Volunteers who did not come forward when called upon would be scouted by their comrades and friends. There is one more question: Colonel Harrison says that the Volunteers ought to equip themselves at their own expense. This demand is not reasonable; we have done as much as we possibly can do, we have learned drill, discipline, and the use of our arms, but I am sure without the assistance of the Government we could not go beyond that. The well-to-do Volunteer, the man who is able to put his hands in his pocket and draw out his money and pay for everything himself, does not exist except in two or three battalions, and no subscriptions can now be got from the public. That source is exhausted. I believe some of the City Companies give handsome donations every year to some of the City regiments, but I do not think that they are disposed to go any further than that. We have done what we are able to do, and we are willing to do a little more if called upon to do so. The Volunteers go in large numbers with corps at Aldershot, Shoeburyness, Woolwich, and elsewhere. I am strongly in favour of their going to those camps rather than going to regimental camps, I think much more is learned from them, especially as regards discipline; it really comes to this, if we are worth having we must be further supported by the Government. Colonel Hale said that if you are prepared to spend 19*s.* 11¾*d.* on an article you would not grudge an extra farthing if necessary to secure it. If we are to go on improving, are to be made more fit to take the field than we are now, we must go to the authorities and ask them to give us the extra money that we require. Let them satisfy themselves that it is spent properly, but anything more to be done must be done by Government. We will give more time, we cannot give more money. If the Secretary of State for War chooses to ask the House of Commons for an additional grant for the Volunteers to render them effective, and can make good his case, I am quite certain no House of Commons will refuse that grant. We are all deeply indebted to Colonel Harrison for the very interesting and instructive lecture he has read to us.

Captain MENDS: As an Adjutant of four years' standing in the Volunteers I think, perhaps, I might be permitted to say a word on this subject. It seems to me that the discussion has tended greatly to matters of detail; after all the principal object of a soldier is that when he gets into the field he should be able to use his arms. My experience of Volunteers quite agrees with that of Colonel Hale and Major Napier, that they are at present absolutely unfit in that respect. They may appear very well at inspection, they may march past fairly well and perform two or three battalion manœuvres indifferently, but the shooting is not considered in the inspection. The corps of which I am Adjutant has the reputation of being one of the best shooting corps certainly in the Metropolis if not in the country, but our figure of merit last year was considerably below the third class shots. We are a very strong corps, and I am really ashamed to say what the figure was, but it would have been disgraceful in any regiment of the line. It is all very well providing greatcoats and water-bottles and all that, but those are things that can be provided at very short notice. You cannot teach men to shoot under two or three months. It is not only shooting at a target, it is shooting at a small and practically invisible object. We all know that in sporting you cannot learn to shoot at a bird at a short distance that you can see plainly without a considerable expenditure of ammunition and time: much less can a man be taught to shoot in the field without training. More money is wanted for the Volunteers, but their first and main duty would be to expend it in teaching the men to shoot. But to teach shooting requires time. You want more than an Adjutant and two or three sergeant instructors for a large

number of men, and you must compensate the men themselves for their loss of wages. There are a few men in every regiment who give up an enormous amount of time to shooting, but they are mostly commercial travellers or men whose time is pretty much at their own disposal; the great majority of men who have fixed hours, clerks, artizans, and others, cannot go down to the range. I have tried the experiment of shooting through every one of my recruits myself, but I found that though I could fix my own time to go to Harrow the men often disappointed me, they could not come, not that they would not, but they really could not get away, and then when they found they could make a rush off some evening they went when I was not there. Therefore I think instead of all the detail, the equipment, and perhaps the headquarters of which a great deal is thought, that if more thought was given to ranges and giving money to compensate men for the time they lose by going to the ranges, and to getting additional instruction for the men when they do go to the range, it would add very much more to the efficiency of the force. Men may be perfectly equipped, you may have magnificent headquarters, and the men may be fairly drilled, and yet when they are sent into the field if we find that they cannot shoot they are worse than an incumbrance.

The CHAIRMAN: I think it is now time that we brought this discussion to a close. You will all agree with me that Colonel Harrison has read a very valuable paper; he has evidently given very great attention to the subject, and is a master of it. I therefore hope that when the time comes for completing the equipment of the Volunteers—and the sooner it comes the better—his views will not be lost sight of. Colonel Harrison in his paper made a remark well worthy of attention: he said that, without calling for a single penny from taxpayers' pockets, it is possible to add very considerably to the efficiency of the Volunteer forces. Of course, that must be done by improvement in organization, and the remark extends, in my opinion, to the other military forces of the Crown, as well as to the Volunteers. When, however, we come to equipment the case is different; then we must have an increased expenditure, and I am in justice bound to say that Colonel Harrison has not shirked that subject. It is one of great difficulty, because when you increase the equipment of the Volunteers the question arises at once who is to pay? Colonel Harrison, as I understand him, would have each corps in its own locality canvass the public for an increase of funds. Now those of us who have been connected with the Volunteer force know that that expedient has been many times tried, and generally found wanting. It is true that Colonel Harrison adds that there should be a Central Association, which would aid the separate corps in raising the funds that may be required; but, for my part, I do not see how a Central Association could give any assistance to individual corps in such a measure unless by providing funds itself, and I do not suppose that it could undertake that. It has been remarked in the paper that in the early days of the movement it was an idea very prevalent that the Volunteer should not only give gratuitous services to the country, but should also provide himself with what would be necessary for carrying on his duties properly as a soldier. If I may use such an expression, that was in the heroic period of the movement. Since then more prosaic views have come into the ascendant. It is now, I think, the ruling idea that if a man gratuitously gives his services to the country in time of peace to learn his duty as a soldier with the contingent privilege that in time of war his life may be taken in the defence of his country, he is entitled to call upon the Government to provide him with whatsoever may be necessary in the shape of personal equipment for carrying on his duty as a soldier properly. I think that this states in a few words exactly what the position is, and I must say I give my adherence without hesitation to that view. The Government of the country has now a Volunteer force of 250,000 men, and notwithstanding the pessimistic views which have been expressed this afternoon as to the state of that force, I am quite prepared to say (and I know a little of the force) that for the defence of this country it is of great value. When we say that the British Empire extends over territory on which the sun never sets, we by no means use a figure of speech, we give expression to a simple geographical fact, of the truth of which any man can convince himself by taking a terrestrial globe. Let him turn it round as he pleases, and his eye will never lose sight of British Possessions. Now when we come to provide a force to defend those vast Possessions, I think we fall very far short of the mark, and the consequence is that our regular Army is always

working at high pressure, carrying on hostilities in distant lands with a mere peace establishment. That is very hard upon our soldiers, and in many cases it leads to disastrous results; but would not the case be infinitely worse if the country had not a Volunteer force to fall back upon for the defence of its own shores? I think it would: therefore the Government is bound to provide everything that is necessary to make the Volunteers efficient. The principle of Government aid was conceded when the Legislature authorized the War Office to give a capitation allowance to the Volunteers, and now the question is merely what the amount of the grant should be. I say, in the name of common sense, that if the capitation grant is given at all, make it adequate to the purposes for which it is intended. So much for the question of equipment. Then with regard to the other point which Colonel Harrison takes up—and that in a very able manner—namely, instruction in military duties, I quite agree with him, that it would be a good thing if a manual were drawn up for the instruction of the Volunteers. He has given an outline of what such a manual should contain, and I have only one suggestion to add, which is this, that Colonel Harrison should himself undertake the duty of compiling that manual, for I am quite sure it could not be confided to better hands. Time will not permit me to follow all the criticisms that have been offered upon the paper, and also upon subjects somewhat irrelevant to it, but there is one exception I must make, and that is as to what has fallen from my friend Colonel Lonsdale Hale. Whatever he writes, or speaks, I know, from a long acquaintance with him, deserves the most serious attention, but I think he has rather unduly underrated the value of the Volunteers. Probably if he knew more of them he would entertain a higher opinion of them. But he has made a suggestion which to my mind is well worthy of consideration, whether it would not be possible to make what I may call some elegant extracts from the Volunteer force in the shape of men who have more time than their comrades to devote to military instruction, and to going into camps for a certain time every year. I am quite certain that men who would undertake such work as that would soon become very valuable soldiers, and would be fit for their duties earlier than the rest of the Volunteer force. I will not detain you longer. I take for granted that you will unanimously commission me, as your Chairman, to offer our best thanks to Colonel Harrison for giving us the benefit of his studies on a subject both important and interesting.

Colonel HARRISON, in reply, said: I must thank you, Sir, very much, and also those gentlemen who have spoken, for the way in which they have received the few remarks that I have offered to-day. I have only two or three points in the discussion to allude to. When I incidentally referred to a "hat," I carefully abstained from indicating what pattern that hat should be. But I may say that such a hat as I recommended, besides being exceedingly handsome, was used by hundreds of thousands of practical soldiers in the American War. With reference to "doing away with the *Volunteer Engineers*," I cannot allow that assertion to pass without a remark. I had thought that in these days of submarine mining, telegraphs, railways, and the various scientific appliances used in modern war, engineers were coming even more to the front than they had done in the past. At all events, the history of the railway from Suakin to Berber ought to dispose of any such assertion as the one I allude to; for, if the reports be true, the contractors' men failed in making that railway, and could not get on at all without the *Military Engineers*. With reference to the question of "money," I must remind the meeting that I said that if the money could not be got from the country, as was done in former years, it must be got from the Government. But what I advocated was getting it in the shape of a grant, and not of equipment, because I am sure that the Volunteers, if left to themselves, will provide themselves with a really good and useful equipment, more suited to their needs than one that might be supplied by the Government. Just one thing more and I have done. From Colonel Davis's remarks I gather that what I said about drill was misunderstood. When I said that certain drills were not required for the Volunteers, I did not mean that they did not want drill, I meant that the *description* of drill should be most carefully considered; and that they should not be taught one iota more than was absolutely necessary. For instance, I do not see the good of their spending hours and hours on such drill as "goose-step" and "extension motions." With these few remarks I beg to thank one and all for the kind attention given to my paper.

HOW CAN WE MAKE THE MOST OF OUR SHIPS?[1]

By Captain C. C. P. FitzGerald, R.N.

As an ironclad takes so many years, from the day that her design is finally decided upon until the day that she is put into commission, and becomes of any value to the State; and as I presume that the most far-seeing statesman in this or any other country would scarcely be bold enough to commit himself to any positive assertion as to how many years, or even months, will elapse before the peace of Europe will be broken, and England, even against her will, be dragged into a war, the questions which present themselves most forcibly to thoughtful minds are somewhat as follows. Is our Navy ready for war? If not, is it in such a state that it could be got ready during the time that we might reasonably expect would elapse between the first serious threatenings and the actual declaration of war, bearing in mind the extreme rapidity with which all recent wars have threatened, gathered, and burst, out of an apparently clear sky?

I will not touch upon the political side of the question, by asking whether the sky looks clear now, or not; that is a question which must be left to statesmen and diplomatists to ask and answer. I only propose to submit such questions as may be fairly discussed by naval Officers; but I scarcely think that our rulers and administrators have realized the fact that a ship building or incomplete, either as to her guns, or any other particular, is of no value to the country; that undeveloped resources are exactly on a par with good intentions; and we all know how much those are worth.

The question of how much money is to be spent on the Navy is a question for the taxpayers, and for the representatives whom they return to Parliament; but the question of whether we make the most of what we get is one which may fairly be discussed by naval Officers; and as opinions differ so much as to the utility of the different modes of offence and defence, the more it is discussed the better.

Many thoughtful and well-informed naval Officers, and also some statesmen and independent Members of Parliament, have lately expressed their views freely in this theatre, as to the inadequacy of our naval forces to protect the vital interests of the Empire; these opinions, deliberately formed, and moderately though unambiguously expressed, appear to have received but little attention at the hands of our self-governed, and, I am afraid I must add, self-satisfied and short-sighted fellow countrymen, who still seem to think that they know more about the subject than we do, and continue to be prac-

[1] The paper was written in May last with a view to being read and discussed, but was temporarily withdrawn by the author in consequence of the apprehended war with Russia.—Ed.

tically deaf to all our warnings. In most of the affairs of life sensible people take the opinion and follow the advice of experts, who have made certain subjects the study of their lives. If we employ a doctor, we follow his advice as to the means which shall be taken for our cure. If we employ a lawyer to defend us, we follow his advice as to the means which shall be taken for our defence. But with the Navy it is not so; civilians decide the means which shall be taken for the defence of the Empire. Civilians propose the estimates, usually for party and not for national requirements, and they also decide how much of the money voted shall be spent upon each of the branches of a very complicated and technical profession. Civilians build our ships, and occasionally astonish us with some very original, but curious designs, based (as a distinguished Officer has described them) upon untried hypotheses.

The policy of putting the administration of such a technical profession as the Navy into the hands of civilians would appear at first sight to be somewhat strange and unreasonable; but the nation wishes it to be so, and whatever the nation wishes is law, and must be right; and I am not so vain as to suppose that anything I can say will alter it; nothing but a national disaster will do that; and then it is just possible that it may be a little too late to alter anything. England has been a little too late once or twice lately; it appears to have become the national watchword, and I hope the country is proud of it! "Ready, aye ready" has hitherto been the motto which the Navy has endeavoured to act up to, and which I most sincerely hope they will still endeavour to act up to, no matter what discouragement they may receive from their countrymen, by having a deaf ear turned to their warning and advice; no matter how inadequate the means at their disposal may appear to be, their duty lies clearly in one direction, and one direction only, and that is, to make the most of what they have got.

We have no lack of noble examples to guide us in taking this line of action. Drake's sailors, in small and ill-found ships, in arrears of pay, with scanty provisions, and often fitted out entirely by private enterprise, flinched not from the Spanish Armada, but attacked it, harassed it, and beat it off.

All through the long French war, our ships of faulty construction, and often badly supplied, and manned in great part by "jail birds" and pressed men, were taken to sea and into action, and gallantly fought by their commanders, who allowed no consideration of inadequate means to stand between them and the path of duty.

Then we have Byng sacrificed at the altar of political expediency, "to encourage the others," as Napoleon said; and so it did, or, at any rate, it failed to discourage them.

Then, nearer to our own time we have Sir Edward Codrington made a political scapegoat of, and his gallant action stigmatized as "an untoward event," notwithstanding that he acted strictly in accordance with his instructions.

And then, latest of all, and I might say greatest of all, we have Gordon, alone and deserted, with nought save his own indomitable

pluck and marvellous and resourceful genius, fighting against fearful odds, for many weary months; and finally crowning a career, perhaps the brightest, the most unsullied, the most unselfish, and the noblest which is recorded upon the long roll of our country's heroes, scorning the shameful suggestion to desert those who had been faithful to him, and dying at his post like a true British soldier, leaving not only his own countrymen, but the whole civilized world, to lament his untimely death. But the spirit of his example can never die, and the figure of Gordon, and the record of his life and death, will remain with us and command admiration as long as the English language is spoken, and longer, if men and women still love to honour noble deeds.

With such examples as these before us, it would not become those to whom the country looks for its defence to do more than call attention to the defects and inadequacy of the means placed at their disposal; and having done so, it is then clearly their duty to devote all their attention and energy to the consideration of how they can make the most of what they have got, leaving to their purblind countrymen the responsibility of the disaster which they are courting.

It is with this object that I wish to consider now how we can make the most of our ships.

I propose to commence with our masted and rigged ironclads, which constitute at present a large proportion of the available strength of our fighting Navy, as it will be upon these, and not upon our ships building and fitting, that the first brunt of battle will fall.

Now I am fully aware that a considerable number of our most thoughtful, experienced, and responsible Officers are in favour of keeping a number of masted and rigged ironclads in commission, for the purpose of training their crews to become seamen of the old type. It is argued by these Officers (whose opinions I may observe are entitled to the greatest respect) that if you do away with masts and sails, and the exercises aloft, which they alone provide, you will lose entirely that fine, dashing, active, intelligent, and resourceful individual called the British tar; and that it is therefore worth any sacrifice to keep up the breed as long as possible; and although they admit, or at least most of them do, that the spars, rigging, and sails of an ironclad detract from her fighting efficiency, yet they say it is very easy to throw all these things overboard before an action begins, and transform the ship in a few hours (or a few minutes as they do it for exercise) into a really formidable fighting machine.

There are several points in the above contentions and arguments which I have the misfortune to differ from; and I will state them as clearly and briefly as possible, with the view of eliciting the opinions of some of the younger and less experienced, though perhaps equally thoughtful, members of our profession.

In the first place, I submit that it is not fair to assume, or possible to prove, that if sails were done away with altogether in the Royal Navy, we should be unable to produce a fighting animal quite as good as the present British seaman; considering the sort of ships which he will in future have to fight in. It is quite possible that he may lose some of his more showy and attractive qualities; the collar of his

white frock may not be so neatly cut, or evenly sewn; his trousers may not fit him quite so tightly round the waist; he may have less of a roll in his gait, and be unable to dance a hornpipe; it is even possible that he may give up chewing tobacco, and even swearing, and yet be quite as well able to manipulate successfully the various complicated machines which will constitute for the future the fighting strength of our men-of-war. It is possible that he may become quite unable to haul out a weather earing in a gale of wind, or even to furl a topgallant sail in a breeze; but, considering the supremacy of the British Navy is unlikely to depend for the future upon the smart performance of these evolutions, I do not see that his ignorance (or incompetence if you choose to call it so) in these respects is of any real consequence. I cannot believe that the change of education, to which, in the near future, the British seaman must submit, will have any effect in diminishing his pluck, his endurance, his amenity to discipline, or his devotion to duty. It may, and probably will, detract from his cat-like agility, and his powers of emulating the performances of Blondin: but the question is, are we not now paying too dearly for the retention of these fine qualities? Is it not similar to a desire on the part of our military authorities (if such existed, which happily it does not) of devoting a great deal of time and attention and expense to the study of the science of archery, on the principle that it is a fine manly exercise, and though unconnected with the fighting power of our troops, yet that it opened their chests, strengthened their forearms, and made stronger and finer men of them? It is always extremely difficult to wean ourselves from the fascinations of the glorious traditions of the past; they seize hold upon the imagination and enchain it; they are facts which we love to dwell upon with national pride. The glories of Trafalgar, the Nile, St. Vincent, are of world-wide renown, and it is not disputed by anybody that these, and many other battles, were won in consequence of the superior seamanship of our sailors; hence it is that we fondly cling to the past, and without giving due weight to the totally altered conditions of naval warfare, we continue to lumber up our ironclads with spars, ropes, sails, and a vast amount of nautical stores, which take up valuable space, and are a great expense, for the purpose of training their crews in a species of gymnastics quite unconnected with the fighting power of the ships, or the duties the men would be called upon to perform in action.

The warmest advocates for the retention of masts and sails in our ironclads, and the keeping up of old-fashioned drills and exercises aloft, will scarcely be so bold as to maintain that a ship will ever have to shift a topsail or a topgallant mast in action, or that it will matter one iota whether the crew have been thoroughly trained in those exercises or not. But perhaps the question of expense, and the loss of valuable space which might otherwise be occupied with warlike stores, is not after all the worst evil connected with keeping spars and sails in our ironclads. The fact that it diverts the attention, the energy, and the talents of both Officers and men from the real work of their profession, is probably of more consequence than the

crippling of the ships themselves. The shifting of spars and sails, and the smart performance of the various evolutions of old-fashioned seamanship are so very attractive; everybody can see them, they are visible manifestations of a certain kind of smartness, and have a peculiar fascination for men brought up amidst the traditions of the British Navy. Our Admirals have always highly commended smartness aloft, and our men think far more of a rapid and showy evolution than of efficiency in gunnery, and the study of the real science of naval warfare, which certainly does not consist in the shifting of topsails and the crossing of topgallant and royal yards.

Far be it from me to underrate the value of the spirit of emulation produced by the healthy rivalry between ship and ship at any kind of drill; nor do I underrate the value of the physical or even moral training produced by competitive exercises aloft, but what I do think is that in the totally altered conditions of naval warfare we must set to work to discover some fresh fields for rivalry and competition, more closely connected with fighting efficiency, than the tricky evolutions which now represent the seamanship of our fathers.

A story was told me a short time ago by a distinguished Officer who lately commanded an ironclad which illustrates pretty clearly the undue exaltation of old-fashioned seamanship which I deprecate. The ship he commanded was of novel construction, full of complicated machinery, numerous compartments, and tortuous passages; men used to lose their way altogether amidst the mazes of this iron labyrinth, and knew not what deck they were on, what compartment they were in, or whether they were walking forward or aft: so it occurred to the Captain that if he had to take his ship into action there would be pretty general confusion down below, and that there would be very little chance of his orders being transmitted or attended to, so he set to work in earnest, and with the assistance of his Officers, and by adopting various and ingenious devices, such as painting bulkheads and passages with different coloured paint, and various other novel plans, he succeeded after several months of close personal supervision and attention in evolving order out of chaos, and rendered his ship a valuable fighting machine; but the various and sometimes irksome drills which went on down below by candle-light, and which were so absolutely essential to the fighting efficiency of the ship, made no show; nobody could see from outside what was going on within, and the probability is that the other ships' companies were under the impression that the crew of this gallant ship spent most of their time in sleeping, which impression would no doubt be strengthened when Officers from other ships came on board and saw men emerging from the gloomy depths below, and blinking and winking like owls in the daylight.

Be that as it may, when the Admiral's inspection took place but scant credit was given to the Captain and his Officers for all the pains and trouble they had taken to get their ship into fighting order, and as they could not cross topgallant and royal yards and shift topsails quite so smartly as the other ships of the squadron, they found themselves but lightly thought of, and suffered under the cold shade of

official displeasure. Then the gallant Captain bethought himself that this was unpleasant, and would be bad for the *morale* of his men; so having got his ship into efficient fighting trim and got scant credit for it, he set to work with equal energy to exercise his men aloft, for he had masts and sails too, and in a very short time his ship succeeded in shifting a topsail a few seconds quicker than any ship in the squadron: then she immediately rose from the depths of official displeasure to the highest pinnacle of fame—she acquired the proud title of "the smartest ship in the squadron," and nothing was good enough for her. This is the end of the story, and I will leave every one to draw his own moral.

Another argument used by those who are in favour of retaining sails in our ironclads is to the effect that if the ship's engines broke down in action, she would be utterly helpless if she had no sails to fall back upon. This sounds very plausible, but how much is it really worth? Does any one suppose that if the "Minotaur," or the "Alexandra," or the "Hercules," or the "Téméraire" broke down in action, the use of their sails would prevent them from being rammed or captured? I cannot believe that any one acquainted with the behaviour of ironclads under sail would for one moment indulge in such a delusive hope. These ships will rarely cruize or fight alone; they will almost always be in squadrons, and if they break down and the enemy eventually get the best of the fight they will be towed into a foreign port, for they will certainly not be able to escape under sail, whereas if their own side gets the best of it they will be taken in tow by a friend.

If the sail power in ironclads is of no real value to help them in action, or on a lee shore with engines disabled; if, moreover, it occupies a great deal of valuable space which might otherwise be devoted to warlike material; if it represents a large item as to cost; if it diverts much of the attention of both Officers and men from the study and practice of the real arts of naval warfare; and if the only thing that can be said in favour of it is that it makes our sailors agile and active, and exercises and trains them in the use of certain materials which some years ago were essential to the motive powers of the ship, but which are now as obsolete for fighting purposes as the bows and arrows of the Saxons, or the clubs of the ancient Britons, it may be fairly asked if we do not pay a little too dear for the luxury of keeping up with very partial success the qualities of seamen of a bygone age; qualities which, though very admirable in their way and very attractive, are no longer required for the manipulation of the Whitehead torpedo, or the loading and pointing of a 100-ton gun.

Let us consider, now, how much we could add to the fighting strength of our rigged ironclads if we took all sails, spars, ropes, yards, and everything but their lower masts out of them, and gave them a couple of derricks for hoisting out boats. Take the old "Minotaur," for instance, a ship which is usually looked upon and spoken of as quite obsolete as a fighting machine, and I must acknowledge that a short time ago I was very much of that opinion myself;

but a deeper study of the subject, in view of the extraordinary development of light and machine-gun fire, has caused me to modify, I might almost say reverse, that opinion; and I cannot help thinking that we shall very soon come back again to moderate armour and numerous light guns, and possibly find some of our supposed obsolete ships, when re-engined and re-armed, to be amongst the most powerful fighting ships we have got. I believe that the "fad" of putting two or three guns of great size and small patches of thick armour upon ships of 10,000 tons has been carried to an absurd extent both in our own and foreign navies, but more particularly in our own. It is, I am convinced, a total miscalculation of the chances of a naval battle; it provides for only one remote contingency, namely, that of being hit by a heavy shot in the right place, and it leaves totally undefended large portions of the ship which are equally vital to her safety at sea, and which can be riddled and knocked to pieces by the machine and light gun fire which is certain to hit in a hundred places. No one who has at all realized the rapidity and volume of the fire of the new quick-firing six-pounder and the various machine-guns can doubt that even if the practice is indifferent, and the proportion of misses large, as it probably will be, yet according to the laws of chance there must be a good many hits; but it is not so with the heavy guns, as from the slowness of their fire it is quite possible that it may be some time before they make a hit at all, and then, perhaps, not in a vital place. It is the difference between a chance and a certainty: we try to provide against the chance, but not against the certainty. This seems to me all wrong, and therefore I think that many of our old ships will come to the front again, and if armed with numerous light and machine-guns that they will be more than a match for the new ships with two or three heavy guns and very limited patches of armour.

What would have been thought of a knight of the middle ages who concentrated the whole weight of his body-armour into a helmet of enormous thickness, on the principle that he was'nt going to have his head smashed by any club that ever was wielded, but who left his body exposed to arrows, lances, pitchforks, or anything else they liked to stick into him? Who would be such a fool as to go for his head?

Now the "Minotaur" is at least machine-gun proof, both at her water-line and all over her battery: she could of course be disabled, possibly destroyed altogether, if she were struck in certain places by the shot or shell from a heavy gun, or even by the shot from a gun of by no means the heaviest calibre; her steering gear also is exposed, and she is a long ship, and though handy for her length, must necessarily be somewhat deficient in manœuvring power. These are some of her disadvantages: let us now see what can be said in favour of her, if properly fitted for battle. First of all, I am informed by experts that, without any additional weight, she could now be fitted with engines which would drive her 16 knots, and this speed would make up considerably for her deficiency in manœuvring power. She could carry about fifty 6-inch guns, most of them behind armour

thick enough to keep out light and machine-gun fire. Then if all her spars, sails, rigging, and everything but her lower masts were taken out of her, see what weight aloft would be saved: she could no doubt have all her five tops strengthened and armour-plated with 2 or 3-inch steel armour, without altering her stability or increasing her draught: and she could carry three or four machine-guns in each top, and all the space and weight down below devoted to boatswain's stores could be given up to machine-gun ammunition. Engined and armed like this, the old "Minotaur" and her sisters would undoubtedly prove very formidable vessels. I imagine that at close quarters (which with their good speed they ought to be able to maintain), if they were engaged with a barbette ship, the latter would find extreme difficulty in loading and pointing her heavy guns. The terrific fire which would be kept up from the five armoured tops of the "Minotaur" would sweep the decks, and pour into the barbettes of any ship within five or six hundred yards of her, in such a manner as to render it impossible that any men could expose themselves without the certainty of destruction.

Her fifty 6-inch guns would also keep up a rapid shell-fire, which, although it would not penetrate the thickly armoured portions of a modern ironclad, could scarcely fail to demoralize an enemy. I am one of those who think that it will be impossible to riddle and destroy (perhaps set on fire) certain portions of a ship without seriously affecting the whole structure, even if such destruction does not affect the stability of the ship, which as a matter of fact it does in all our modern ironclads.

It must not be supposed that I am holding up the "Minotaur" as the typical fighting ship of the future: far from it, she has grave defects which might easily, with our present knowledge, be rectified in future designs; but I think that we shall soon come back to that type of ship, in preference to two or three heavy guns and limited patches of armour: take precautions, in short, against the greatest number of chances, and not against one off chance which may never happen; and I may here observe that my views on this subject are shared by many experienced Officers. Personally I look upon the "Inflexible" as the worst armed ship in the British Navy for her tonnage; only fit to bombard forts, but not fit to contend against a ship of her own size, armed with lighter but more numerous guns.

It would appear as if this shrinkage of armour as it is called, that is, the thickening of armour in some places, and the stripping of it off altogether in others, had been carried out under the impression that nothing was going to be fired against a ship in action except guns of the heaviest calibre. If this heavy gun attack only was what we might reasonably expect, then I believe this shrinkage of armour might be defended; but as I anticipate a thousand small shot and shell will be fired in action for every heavy one, I cannot help looking upon it otherwise than as a very risky proceeding; and I submit that we are not justified in continuing it, or in building any more ships on these erroneous principles, in view of the rapid development in all foreign navies of light and machine-gun fire.

It may be said that this development of light gun fire has taken place in consequence of the shrinkage of armour, and is in fact the reply to it. It very probably is so; but then we are bound to reply again, by sacrificing some weights to armour our ends, and by building no more ships of the citadel type.

A short time ago I listened with much interest and attention to two lectures delivered at the Royal Naval College at Greenwich, by a very able official from the Constructor's Department at the Admiralty. The lectures were intended to prove that the English design of central armoured citadel and unarmoured ends was superior to the French design, wherein a greater percentage of the displacement is given to armour-carrying power, and a complete water-line belt, thicker amidships even than the English, is given to the ship, thus assuring her buoyancy against everything but the heaviest guns (though, of course, in neither case does the armour protect against ram or torpedo).

The lectures were illustrated by drawings, and clever but delusive models; and I believe the lecturer convinced the majority of his audience that the citadel principle was right, and that the French completely belted system was wrong: but then the majority of his audience was composed of young men who had never been to sea, students in engineering and naval architecture, who knew nothing whatever about the behaviour of a ship at sea, and who were consequently quite unable to detect the fallacy of the arguments and the illustrations. But I believe I am correct in saying that almost all the seamen of experience who listened to those lectures came away anything but satisfied with the superiority of the English design. Personally I was appalled at the want of reasonable argument, and at the flimsiness and transparent absurdities of the special pleading brought forward in support of the citadel ships.

It is impossible that I should enter now into all the plausible but erroneous arguments, or describe the misleading models which were produced in defence of the citadel type, but I may just mention one, although it was by no means the worst. It was a model of a section of a ship intended to show the power of loose water in extinguishing rolling: the section was suspended on an axis, a short distance above the centre of gravity, I presume at the metacentre, and a glass tube with a little water in it attached to the model showed the extinguishing power of loose water, which nobody doubted; but I need hardly point out to seamen that a model suspended on an axis, and set swinging like a pendulum, bears about the same relation to the behaviour of a ship at sea, as a rocking horse on a fixed arc bears to the motion of a horse galloping. I say I was appalled at the poverty of the arguments used in support of the citadel ships: it is to me quite incomprehensible that any seaman who takes the trouble to look into the matter should accept the statement of their designers, that these ships will be either manageable, fightable, or habitable, with their ends riddled, and five or six hundred tons of loose water washing about in them. I cannot believe it, and until it has been actually tried by experiment, I think that very few seamen will believe it; it is so totally contrary to all our experience.

It is so easy to work out inventions on paper and prove them by models; but it is very well known that there are but few inventions which do not turn out in practice to be something quite different from what they were intended to be. The calculations might have been all correct as far as they went, but a small item, perhaps several small items of the forces of nature, had been unforeseen and not been taken into account, so that the result was quite different from that anticipated: we have only to look at the records of the Patent Office to convince ourselves of the enormous number of failures of untried inventions. It may be said that the citadel ships are not an untried invention, and that their designers can foretell with accuracy what their behaviour will be under various conditions. I cannot accept this statement. Many machines founded on supposed scientific principles have failed utterly in practice; and then *after*, but not *before*, the failure the inventors have been able to put their fingers on the flaw, and explain satisfactorily the cause of failure: and I submit that we are running a terrible national risk by building eleven ships of a novel design, before one has been tried at sea, in the condition which the designers maintain will be safe, but which the majority of naval Officers, reasoning by experience, think will be unsafe.

I have already in this Institution entered at some length into the reasons why I thought the citadel principle a mistake; and although the other side of the question was ably argued, I think that the supporters of the citadel ships failed to convince naval Officers that the French belted system was not superior for seagoing fighting ships.

It is claimed for the more recent ships of the citadel type, namely, those of the "Admiral" class, that they will have a knot more speed than the French belted ships; and no doubt speed is a very desirable quality; but when we are told that they will only lose a quarter of a knot of speed when they are riddled and their ends full of water, we may, I think, be allowed to doubt the assertion. Some experiments were made at Torquay a few years ago, by Mr. Froude, upon a model of the "Inflexible," in order to see what effect upon the longitudinal stability of the ship would be produced if she received shot-holes in her foremost unarmoured end of a certain shape, scoop-shaped holes, such as shot striking diagonally might be expected to produce; and according to the official report, the result of the experiment proved that if the "Inflexible" herself received wounds of this nature in her bow, she would tip dangerously, in fact go down by the head altogether if she tried to steam more than 7 knots. And yet in the face of this we are asked to believe that the 16 knots of the "Admiral" class will be only reduced to $15\frac{3}{4}$ when their ends are riddled and water-logged. It is assertions of this kind which startle us, and cause us to look with doubt on some of the other good qualities claimed for the citadel ships.

The question now is, how can we make the most of these ships? How can we make the best of what we have got? Machine and quick-firing guns have entirely altered the condition of affairs since these ships were designed. It is almost a certainty now that the broad region of their water-line will be pierced in numerous places

by machine-gun fire; and that the consequences will be very serious, as the holes made in thin steel by machine-guns are by no means small.

A 2-inch water-line belt of steel has already been hinted at by the Chief Constructor himself, as a means of keeping out machine-gun fire, the weight to be obtained at the expense of leaving out some heavy gun ammunition. I fully recognize the wisdom of leaving out some heavy gun ammunition, in view of the slowness of fire of heavy guns; but I do not think 2 inches of steel would be enough. We hear a great deal about the value of armoured decks for resisting plunging fire, and preventing heavy shot from going out through the bottom on the other side. This is a contingency which I consider to be very remote, particularly in view of the low trajectory of modern guns, and I think that we pay too dear for the luxury, and that the weight would be better distributed in side armour; it would give side armour of very considerable thickness, and would, I think, provide against a greater number of chances, which is all we can do in any case; and this should always be borne in mind when we are arguing about the distribution of armour, for there is no such thing as absolute safety in any combination.

The French have managed to combine both, a complete armoured belt and a covering armoured deck of considerable thickness. We have distributed our weights otherwise, and, as I venture to think, less wisely; for I do not think that Sir E. Reed's maxim can be repeated too often, viz., that the first duty of a ship is to float; and it is by no means certain that ours will do so under the infliction of very moderate wounds.

The more I study the subject, the more firmly I feel convinced that enormously heavy guns and patches (very limited patches, be it observed) of armour will not govern the designs and construction of our future fighting ships. I think we shall come back to moderate armour and numerous light guns, with perhaps one or two heavy ones, not protected as now with very thick armour. The object will be to keep out the greatest number of shot possible, both from the water-line and from the battery; and we shall give up trying after the impossible task of making any portion of the ships impregnable to the fire of the heaviest guns. We must accept the chance of a heavy shot striking a vital part as one of the chances of war: we cannot escape it.

I do not think that you can smash up and destroy one part of a ship without demoralizing the other parts. It is all very well to talk about a fort on shore being able to lose its outworks, and yet defend successfully its citadel; a ship is a very different affair, and if any part of her during an action either catches fire or develops a tendency to turn bottom up, it will certainly jeopardize the whole structure. The idea that it will not do so appears to exist in the minds of the defenders of the citadel ships, and although they have endeavoured to prove it by means of mathematical calculations, and clever and ingenious models, which remind one of a conjuror's professional apparatus, I venture to think that they have failed to prove it.

I firmly believe that a ship of the "Admiral" class, with her ends

and topsides damaged, will at sea, in ordinary weather, develop eccentricities of behaviour quite as erratic, and probably more dangerous, than that of the "Agamemnon," in her intact condition; which ship, I am informed, with her helm *amidships*, turned a complete circle to port in nine minutes and ten seconds.

Now as I cannot for one moment believe (unless they tell me so) that the designers of the "Agamemnon" intended that she should perform this novel and peculiar manœuvre on her own account, I am justified in asserting most distinctly that this ship has not proved in practice to be that which her designers intended her to be. Moreover, it is a self-evident fact, which requires no argument to prove it, that some very powerful dynamical forces, which in practice act upon the ship, must have been entirely omitted from the calculations of those who designed the "Agamemnon;" or if taken into account they must have been assigned a false value, which comes to the same thing.

The question, then, which will present itself to the minds of most practical seamen will be somewhat as follows. Is it reasonable to ask me to believe in the safety at sea of a riddled citadel ship, simply upon the unproved calculations of the same people who designed the "Agamemnon" to go straight, but found in practice that she turned a circle in nine minutes and ten seconds, especially when all my experience as a seaman, and my knowledge of the behaviour of a ship at sea, point in an opposite direction?

The title of my paper is, "How can we make the most of our Ships?" But this is a very difficult question to answer in the case of the citadel ships, for in order to calculate how you can make the most of a thing, it is necessary to know how much it is worth already; and this is just exactly what we don't know with regard to them; and as experiments are said to be too expensive, and in fact unnecessary, we are not likely to know until it is too late.

I am informed that the Captain of one of these ships now in commission has been anxiously inquiring the price of chloride of calcium, with the view of carrying out the suggestion made at page 259 of the "Gunnery Manual," namely, to stuff 2 feet of white oakum soaked in chloride of calcium into his coffer-dams, in order to *reduce* the inflow of water into his ship. I also hear that he is going to hang chain cables round inside his coffer-dams, to try and keep out some of the smaller shot; so he is evidently going to try and make the most of *his* ship; but it will strike most people as being a little bit strange, that one of our first-class battle-ships of the present day should have to resort to an old-fashioned dodge, practised more than twenty years ago by a wooden paddle-wheel steamer with exposed engines. But yet the Captain of the ship I speak of is no fool, and knows what he is about.

I have lately been trying some experiments by firing shot through india-rubber, in order to see what the use of it would be as a permanent leak-stopper always in its place: and I may here remark that although the idea was original so far as I was personally concerned, inasmuch as I was unaware that it had ever occurred to anyone

before, yet I found on enquiry that it had been tried on torpedo-boats some years ago, and a patent taken out for it by Colonel Fosbery, V.C. But the patent appears to have been abandoned and the idea dropped, probably in consequence of the difficulty of fixing the india-rubber to the torpedo-boats, the addition to weight, and the reduction of speed it would produce. But like many other inventions, it would seem that it appeared before its time—before the necessity for it had fully arisen. But now that machine and quick-firing guns have been invented, which can pierce the water-lines of our first-class fighting-ships, I venture to think that the necessity for it has fully arisen; but as it is still to a great extent an untried device, I would speak of it with the greatest diffidence, and by no means claim for it that it is a practicable and certain plan for keeping ships afloat; although it is quite possible that I might be able to prove by mathematics that it will do so. I prefer to wait until more exhaustive experiments have been made with it, before I claim for it a place amongst the materials of naval architecture. I may explain that the mode in which I propose to use the india-rubber is by putting sheets of it an inch thick in coffer-dams in the region of the unarmoured water-lines of all ships, as I think it extremely doubtful whether it will stand exposure to the weather, and the wear and tear to which it would be subjected as an outside water-line belt. Its cost would be about 22*s.* a square foot, and, roughly speaking, it would cost about three or four thousand pounds to do the "Edinburgh's" coffer-dams in this manner—a small item, I venture to think, if it would really keep the water out, and from my experiments I really believe it will under all ordinary fire.

Before concluding, I have a few more words to say of the "Admiral" class of citadel ships, as compared to the French completely belted ships of the "Duperré" class. In the "Admiral" class the partial water-line belt is combined with lowness of belt; and this combination of a low and incomplete belt appears to me to be simply madness, as one of the essential conditions of safety in a low-belted ship with topsides riddled is, that she should be kept very nearly upright; and there appears to be no reason why this should not be done by cautious management in all ordinary weather with ships having a low but complete belt like the French ship "Amiral Duperré." But when the low belt stops short of the ends, and 500 tons of water can be admitted on to the armoured deck by the fire of nothing larger than machine-guns—a condition which it is not denied will probably happen to our "Admiral" class in action—you immediately throw away all possibility of maintaining the one essential element of safety in the low belt (viz., that of keeping the ship upright), in anything but a flat calm and dead smooth water; because the 500 tons of loose water in the ship must run to the lowest side, and increase enormously any heel which even running a gun out would give the ship. Moreover, in the "Admiral" class ("Collingwood," for instance), the belt which was originally only 3 feet above the water (that is to say, the same as the French ship) is now, through the admission of the water, reduced to about one half, or 1 foot 6 inches.

Therefore, although the necessity for keeping the ship upright is double as great, or in other words, although she can only afford to have half the list of the French ship, yet the chances of keeping her upright are enormously reduced by the presence of 500 tons of free water; in fact, I should say that there was not the slightest chance of keeping her upright, or of preventing her from capsizing.

We are told that the greater metacentric height possessed by the English ships will make up for their having only 1 foot 6 inches of armoured freeboard and 500 tons of loose water in the ship. I cannot believe the statement. It may give the model a slight increase in statical stability in the tank in the model room, but this bears but a very slight, and in fact a misleading relation, to the behaviour of the ship at sea; and my belief is that the "Collingwood," if only moderately damaged in her ends and sides above the armour, would inevitably capsize in ordinary weather.

It is really all a question of the *amount* of damage which will capsize these ships; for even their own designers admit that complete destruction, as they call it, of the unarmoured parts will cause them to capsize; but I believe that very incomplete and partial damage will cause them to do so.

Let us now compare the two ships, English and French, and try to estimate their respective chances of floating right side up, under certain conditions of partial destruction of unarmoured parts.

[*It was intended to have compared the two designs at this point by means of diagrams.*]

It is not denied by anybody that a shot from one of the heavy guns, if it strikes at right angles and point blank range, will penetrate almost any known armour, and perhaps do fatal damage to the ship. This, as I said before, is one of the chances of battle which must be accepted on both sides, the same as the chances of being struck by a torpedo or the ram; but I venture to think that it is a somewhat remote chance, and has nothing to do with the perfect certainty (with present armaments) of ships being hit all over by the missiles from machine and quick-firing guns; and what we really have to take into consideration is the amount of disablement which this sort of fire will cause to different types of ship, and not the chance of a direct blow from a heavy shot, which, it is admitted, may destroy any ship. If this proposition be correct—and I submit that it is the only reasonable way of looking at the question—let us compare the distribution of armour on the "Collingwood" and "Duperré;" also the size of vulnerable target which each will offer to light guns, and the consequences to each ship of the partial destruction of unarmoured parts; first observing, that although "Duperré's" armour is greater in extent than "Collingwood's," it is no thinner, but, on the contrary, thicker over the vitals, and therefore more likely to resist heavy shot which strike at angles. This is partly due to the fact that the French have given up a greater percentage of their displacement to armour than we have, leaving out some ammunition, coal, and other things—an arrangement which may or may not be wise; but it is also partly due to the fact that the representative first-class French

ship "Duperré" is 1,000 tons larger than our latest, or "Admiral" class of ships. Now there is no reason that I know of why the "Collingwood" and her sisters should have been deliberately built 1,000 tons smaller than the "Duperré" and her sisters, except on the principle that it is good strategy to have a force slightly inferior to that of your enemy at a given place and a given time. The great Napoleon used to say that the opposite plan was good strategy; but that is some time ago now, and strategy may have altered since then: but even if it has done so, we shall require something more stubborn than strategy to alter in our favour. We shall require some of the fundamental laws of hydrostatics to be altered for us, before our first-class battle-ships can be compared on terms of equality with those of the French.

To continue to build ships of this type appears to me to be unwise, in view of the ships which our neighbours are building.

England is already spoken of, by foreign newspapers, as the "*ex*-mistress of the seas." If war should prove that she is so, her days will be numbered; the British Empire will be broken up, and England herself in all probability cease to exist as an independent Power.

Apart from the technical questions of the designs of fighting ships, the inadequacy of our present Navy to protect the vital interests of the Empire in case of war ought to be a subject of the deepest concern to all Englishmen. It is entirely a question of money; money and time. Will Englishmen have the wisdom to make the necessary sacrifices, and spend the necessary money in time, while the day of grace still lasts? Money enough to re-engine and re-arm our old but still effective ships; and money enough to build a sufficient number of new ones of the most powerful type, to meet the needs of the Empire and to regain our lost place amongst the nations of Europe? Or will they wait until it is too late; blindly put off the evil day, and then spend ten times the money when it is too late to be of any use? We have had many examples to show us that personal bravery and devotion to a cause, carried even to the extent of fanaticism, are no match against organization and the scientific development of the various engines of modern warfare: therefore it is nothing less than blind folly to trust only to the courage and devotion of our soldiers and sailors, and to the vast extent of our undeveloped resources in material. We shall be given no time to develop anything except a panic; and then once more we shall hear the bitter cry of "too late." We shall hear angry recriminations bandied from one political party to the other. The hungry millions of the poorer classes will rise demanding bread for themselves and their children, and declaring passionately that they have been betrayed; just as their neighbours across the Channel did some fourteen years ago. But the horrors of the Paris Commune will pale beside the scenes we may expect in England if ever her sea-borne food supply is cut off, or even seriously interfered with. And this is the catastrophe which we are now courting.

We may search all history in vain for the record of any rich nation, which was allowed by her neighbours to retain her riches for

long without being strong enough and ready enough to defend them by force of arms. We have Divine authority for assuming that the strong man armed will be able to keep his goods in peace for a time at least; but we have no authority, either sacred or profane, for assuming that the rich man unarmed will be able to do so.

Let us then banish from our minds the infatuated idea that in future all national disputes will be settled by arbitration. Small differences, which we do not care much about, may perhaps be so settled: but we have no shadow of justification for assuming that while men's passions and ambitions remain such as they are, the serious and vital interests of nations will be decided otherwise than by the stern arbitrament of war.

The following short extracts from Jomini's "Art of War" appear to me to be pregnant with forcible argument and sound reason; and by the substitution of the word "Navy" for "Army," to be particularly applicable to the England of to-day:—

"When the control of the public funds is in the hands of those affected by local interest or party spirit, they may be so over-scrupulous and penurious as to take all power to carry on the war from the Executive, whom very many people seem to regard as a public enemy rather than as a chief devoted to all the national interests. The abuse of badly understood public liberties may also contribute to this deplorable result. Then it will be impossible for the most far-sighted administration to prepare in advance for a great war, whether it be demanded by the most important interests of the country at some future time, or whether it be immediate and necessary to resist sudden aggressions.

"In the futile hope of rendering themselves popular, may not the members of an elective legislature, the majority of whom cannot be Richelieus, Pitts, or Louvois, in a misconceived spirit of economy, allow the institutions necessary for a large, well-appointed, and disciplined $\left(\begin{matrix}\text{Navy}\\ \text{Army}\end{matrix}\right)$ to fall into decay? Deceived by the seductive fallacies of an exaggerated philanthropy, may they not end in convincing themselves and their constituents that the pleasures of peace are always preferable to the more statesmanlike preparations for war?

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"It is doubtless true that whatever increases the prosperity of the country should be neither neglected nor despised. It is also necessary to honour the branches of industry which are the first instruments of this prosperity; but they should always be secondary to the great institutions which make up the strength of States, in encouraging the cultivation of the manly and heroic virtues. Policy and justice both agree on this point; for, whatever Boileau may say, it is certainly more glorious to confront death in the footsteps of the Cæsars than to fatten upon the public miseries, by gambling on the vicissitudes of the national credit.

"Misfortune will certainly fall upon the land where the wealth of the tax-gatherer or the greedy gambler in stocks stands in public estimation above the uniform of the brave man who sacrifices his life, health, or fortune to the defence of his country."

NAMES OF MEMBERS who joined the Institution between the 1st October and the 31st December, 1885.

LIFE MEMBERS.

Bowles, H., Major Yorks. Regt.
Baird, John K. E., Rear-Admi.
Maude, G. E., Capt. 4th Bn. E. Surrey Regt.
Sandeman, H. G. G., Mid. R.N.
Bentinck, R. W., Mid. R.N.
Lambert, H. M., Sub-Lieutenant R.N.R.
Hickman, H. O. D., Lieut. 1st Bn. Yorks Regt.
Adye, G., Capt. Ben. S.C.
Jones, H. I., Lieut. R.H. Gds.
Halsey, A., Mid. R.N.
Delap, J. B., Lieut. Rl. Bucks Yeo.
Anstice, R. H., Major late 29th Regt.

ANNUAL SUBSCRIBERS.

Burrowes, H. G., Lieut. R.A.
White, J. B., Lieut. R.N.R.
Leith, J. M., Capt. 5th Bde. Sco. Div. R.A.
Sturroch, J. G., Major Ayr and Galloway Arty. Vols.
Feldtmann, H., Capt., 1st Lanark Arty. Vols.
Verschoyle, E. G., Lieut. Gren. Gds.
Maude, F. S., Lieut. Colds. Gds.
Whinyates, F. T., M.-Gen. late R.A.
Kimber, H. D., Lieut. 6th Middx. R.V.
O'Malley, P., Quartermaster Comsst. and Transpt. Staff.
Mortimer, F. W., Capt. 6th Middx. R.V.
Fordyce, A. V., Lieut. 2nd V.B. S. Staffs. Regt.
Griffin, E. J., Lieut. R.N.R.
Unwin, M.-Gen., Ben. S.C.
Wortham, H. Y., Col. R.A.
Theed, John H. W., Lieut. R.N.
Crighton, C. E., Lt.-Col. S.I. Rail. Vol. Corps.
Lovett, A. C., Lieut. 2nd Bn. Glouc. Regt.
Miller, F. H., Supt. H.M. Victng. Yard, Deptford.
Henty, A., Capt. 2nd Suss. R.V.
Willink, H. G., Lieut. 14th Middx. R.V.
Strange, H. B., Lieut. R.A.
Maude, R. J., Capt. Rif. Bde.
Emeris, J., Col. S. Staffs. Regt.
Boyle, Hon. Robert F., Sub-Lieut. R.N.
Chesney, G. T., C.S.I., M.-Gen. R.E.
Glen, A., Lieut. 14th Middx. R.V.
Lewes, H.A., Col. late Ben. S.C.
Younger, W., Lieut. 16th Lancers.
Osborne, C. A., Lieut. 16th Lancers.
Kirkpatrick, H. P., Lieut. 16th Lancers.
Wyndham, G. P., Lieut. 16th Lancers.
Beaumont, E. De G., Lieut. 16th Lancers.
Jeffreys, R. D., Mid. R.N.
Stamer, L., Lieut. 16th Lancers.
Manners, R.A., Col. late Royal Scots.
Daubeny, G. A., Major 2nd V.B. Devon. Regt.
Evantural, A., Lt.-Col. 9th Batt. Rifles (Voltigeurs de Quebec).
Burges, W. E. P., Capt. 3rd Bn. Glouc. Regt.
Compton-Bracebridge, J. E., Lieut. 3rd Middx. Arty. Vols.
Hedley, F. A., Lieut. S. Staffs. Regt.
Prower, N., Lieut. 22nd Middx. R.V.
Moore, T. B., Lieut. R.E.
Phillips, G. E., Lieut. R.E.
Evans, U. W., Lieut. R.E.
Schreiber, A. L., Lieut. R.E.
Harrison, T., Lieut. R.E.
Gaynor, H. F., Lieut. R.E.
Stokes-Roberts, E. R. B., Lieut. R.E.
Tulloch, J. A. S., Lieut. R.E.
Stoehr, O. H., Lieut. R.E.
Powell, S. H., Lieut. R.E.
Liddell, W. A., Lieut. R.E.
Edgell, E. A., Lieut. R.E.
Bland, E. H., Lieut. R.E.
Williams, H. B., Lieut. R.E.
Enthoven, C. H., Lieut. R.E.
Edwards, R. F., Lieut. R.E.
Dixon, R. T., Lieut. R.E.
Medlicott, F. M., Lieut. R.E.
Lambert, D. R., Lieut. R.E.
Perceval, C. C., Lieut. R.E.
Napier, Hon. G. C., C.I.E., Major Bom. Army.
Cameron, J. W., Lt.-Col. Dur. Arty. Vols.
Beech, C. M., Capt. 4th Bn. Rl. War. Regt.
Gubbins, F. J. B., Lieut. R.E.
Baker, J. V. V., Capt. R.A.
Lang, W. M., Capt. R.N.
Hall, W. B. R., Lt.-Col. R.A.

OCCASIONAL PAPERS.

This portion of the Number is reserved for Articles, either Original or Compiled, on Professional Subjects connected with Foreign Naval and Military matters; also for Notices of Professional Books, either Foreign or English.

It is requested that communications or books for review may be addressed to Colonel Lonsdale Hale, at the Royal United Service Institution, Whitehall Yard, London, S.W.

REGULATIONS FOR THE SUPPLY OF FOOD FOR THE FRENCH ARMY IN TIME OF WAR.[1]

By Major A. M. de la Voye, Essex Regiment, Assistant Director of Military Education.

Art. 1. These regulations are divided into three parts, each one dealing with the food supply in the different stages passed through by an army in war time.

Part I.—Supply during Mobilization.
„ II.—Supply during Concentration.
„ III.—Supply during Active Operations.

Part I.—Supply during Mobilization.

Chapter I.—*Temporary Magazines in the Centres of Mobilization.*

In accordance with the general instructions relating to the supply of food in time of peace, a supply, calculated to last twenty days, is held ready at all times in each garrison, to assure for the time being, and up to the twentieth day of mobilization, the rations of the 1st and 2nd categories of the active army during their stay in the said garrisons, as well as the rations for the territorial army and the regular troops remaining in the country.

These supplies are collected and distributed on the spot by the Officers of the administrative department remaining at home, assisted by a staff organized beforehand for the supply service in the event of war.

Each place is provided in peace time with the supplementary matériel and tools which will be required by the increase of the effective strength.

Art. 3. The foregoing refers to the supply of bread, field rations, and forage. The supply of fresh meat is regulated as explained hereafter.

[1] Instruction du 23 Juillet, 1883, "Sur le Fonctionnement du Service d'Alimentation en temps de Guerre."

In peace time fresh meat is issued to the troops by regiments, which are authorized to arrange for their own supply through the committee of company mess funds, as laid down in the Regulations of 1861, or separately by companies, squadrons, or batteries in accordance with the Regulations of the 2nd November, 1833.

In order to ensure the proper execution of this duty during the time of mobilization, it is necessary that in those contracts concluded by the troops special arrangements should be made whereby the tradesmen are bound to supply fresh meat to the mobilized corps, irrespective of their strength, as well as to the regiments of the territorial army, which in case of war, and during the existence of the contract, are mobilized in the same places as the regiments of the active army. If necessary, an increase of price, not to exceed 15 per cent., is allowed from the second to the twentieth day of the mobilization. It is further to be understood that in the event of the order for the mobilization being issued in the last month of an expiring contract, that contract will, as a right, be carried on for another month.

As regards those corps which supply themselves directly through the company mess fund, it is necessary from the commencement of the mobilization, as may be found useful by the corps themselves, to call for special contracts in order to ensure the supply of fresh meat to the troops of the active army as well as to the territorial regiments remaining in the country.

To enable the civil butchers to carry out the slaughter of the required cattle which, in consequence of the journeyman butchers having to join the colours, will in all parts of the country be made more difficult, it will be necessary to give the army contractors the assistance of auxiliary journeymen.

The military authorities should have decided beforehand the number of assistants who will be required in each place by the civil butchers. These men, furnished by the auxiliary services of the territorial army, or, if needs be, by the active army, are told off by name, and are required to be present on the second day of the mobilization.

Lastly, in the event of its being found impossible to conclude regular bargains by contract, the supply of fresh meat will be assured during mobilization either by daily purchases made by the regiments, or by means of requisitions. For troops billeted in a place it may be found advantageous to call on the inhabitants to feed them.

CHAPTER II.—*Strategical Transport.*

Art. 4. From the commencement of the mobilization the troops are sent on to the points of concentration.

They take with them bread for two days, biscuit for two days, groceries for four days, two tins of preserved provisions for every five men, and forage for two days. The bread and forage taken with the troops are renewed if necessary on the march.

Morning and evening meals prepared in halting stations on the line of march, with groceries, complete the victualling of the troops.

The details for the organization and for the execution of the supply service during strategic movements are to be found in the Ministerial Instructions of the 9th of March, 1883.

Part II.—Supply during Concentration.

Chapter I.—*Means of carrying out the Service.*

Section I.—Personnel.

Art. 5. The Military Intendant of each Army Corps superintends the supply of provisions during the period of concentration.

He receives, with the order for mobilization, information as to the places in which his Army Corps will be stationed, as well as of the arrangements made at the base of operations (store magazines, centres of fabrication, centres of distribution, staff).

He starts on the day fixed by the Minister, accompanied by the necessary staff, selected from the headquarters and the divisions of the Army Corps.

On the days named in general orders the several sections of the field bakery set out, as well as the personnel necessary to ensure the bread supply in those places occupied by the Army Corps.

Section II.—Matériel.

Art. 6. It being understood that Army Corps are never to be deprived of those means of working which belong to them as forming part of the matériel of the 1st line, a special matériel is established, details of which are given in the circular of the 23rd October, 1882, in peace time at the magazines where the stores are concentrated.

At the commencement of the mobilization, and at the same time as the first convoys of provisions, the Intendant is directed to proceed to those centres of manufacture chosen in rear of the cantonments of the Army Corps.

The field bakeries of each Army Corps proceed to the centres of manufacture told off to those corps on the days and under the conditions given in the preceding Article.

By the means above given each Army Corps has at its disposal at the points of concentration four sheet-iron ovens, and eighteen wheeled ovens, and is enabled to issue the necessary quantity of bread without having to call upon the local civil bakeries.

These latter at best can only be considered as adjuncts to guard against unforeseen wants, as they are scattered about without proper supervision, and require a large number of workmen.

Section III.—Transport.

Art. 7. The organization of the service for concentration is completed by the following dispositions, which assure the carriage by local transport from the supply depôt to the centres of manufacture, if there are any, and from them to the centres of distribution :—

In peace time the number of necessary carriages is settled ; the General Officers commanding the regions told off for their supply subdivide the burden among the communes, and notify this distribution to the regional Military Intendant. By his directions the territorial Military Sub-Intendants prepare beforehand requisition orders for the commune, giving the numbers to be supplied by each, in such a manner that on his arrival the Military Intendant of the mobilized Army Corps finds his transport ready.

The requisition orders, which are sent out on the first notice of mobilization, give the conditions to be fulfilled as regards the carriage to be furnished.

These vehicles are chosen from among the non-classified, and eventually from such of those classified which are in excess of the requirements of the active army.

On receipt of the requisition orders the mayors send in to the territorial Military Sub-Intendants a description of the carts demanded, with a nominal roll of the drivers. They also send in a descriptive statement of the non-classified carriage which is available.

The Sub-Intendants furnish the Army Corps Intendant on his arrival with these lists; he is consequently in a position to meet any unforeseen calls on the transport.

The drivers receive a number, and an armlet bearing this number; they are divided into squads in accordance with lists furnished by one of the cavalry regiments of the Army Corps.

A detachment of the particular regiment is consequently mobilized, and arrives at the points of concentration at the same time as the Military Intendant of the mobilized Army Corps, and is at once placed under his orders.

CHAPTER II.—*Execution of the Service.*

Section I.—*Centres of Manufacture.*[1]

Art. 8. The provisions and the matériel for the concentration of Army Corps are collected in peace time at points selected by the Minister.

From the commencement of the mobilization these stores are sent by rail to the various places specially indicated as centres of manufacture, when it is not considered advantageous to send them by carts.

Time-tables are made out in peace time, and the trains start in succession from the second day of the mobilization, commencing with those carrying such articles as will be immediately required.

One or more centres of manufacture situated near the detraining stations are told off to each Army Corps. The employment of the field bakeries in concurrence with the iron ovens permits of more than one centre of manufacture.

On the arrival of the personnel and of the matériel enumerated in Articles 5 and 6, the iron ovens are put together, the field bakeries are organized, and the manufacture begins as soon as possible.

Section II.—*Working of the Service.*

Art. 9. On arrival at the base of concentration of the Army Corps, the Military Intendant is informed by the territorial Sub-Intendant, who in peace time has made his arrangements of the state of the magazine, the means of transport (Article 7), the resources of the region, and he at once organizes the service.

As soon as the commissions in charge of the various sections of the etappen are organized, they are informed by the Intendant of the centres of manufacture and of distribution.

The territorial Sub-Intendant is not moved during the mobilization. From its commencement, according to the orders he has received on the subject, he sees to the victualling of the first troops gathered together in the zone of concentration, and after the arrival of the Army Corps Intendants he remains under their orders for the period of concentration.

When active operations begin he takes charge of the personnel and matériel

[1] Refer to the making of bread.

(excepting those belonging to the field bakeries), and by their means and with he assistance of the territorial personnel, continues to ensure the production of bread which is added to that which is obtained by those organizations formed for the victualling of the army when in the field.

The iron ovens are set up on arrival at the centres of manufacture.

The cavalry detachment on arrival is employed in gathering together the requisitioned transport, as stated in Article 7.

The troops arrive at the points of concentration with bread and groceries for two days, which ensure their victualling for that period without their having to touch the two days' reserve rations carried in the haversack. Meanwhile, the iron ovens as they come up, and the wheeled ovens, have begun making bread, the convoys have been assembled, loaded up, and started in such a way that before the first arrivals have consumed the bread they carried with them the first distributions can be made in the cantonments, and the service commence its regular work. The troops are thus provided with bread, field rations, and oats.

The victualling of the men and horses is completed by means of requisitions, or by direct purchase, in accordance with the rules laid down in Chapter III of Part III of these Regulations.

The requisitions or purchases refer to the following articles, which are not included in the supplies for concentration :—

Fresh meat ;
Straw and hay ;
Wood ;
Liquids.

Measures are, moreover, taken to prevent absolutely all non-authorized export, from the zones of concentration, of cattle and of all articles generally required for the supply of the troops.

Art. 10. Concerning the supply of meat it must be remarked that military requisitions are supposed to cease as soon as the regular services defined in Chapter IV of Part III are in working order.

However, the Officer in command of the region in which the concentration takes place, when he considers that the local resources are insufficient, may assist the supply services either by means of requisitions or by purchases made in other parts of the country, or by contract for the supply of rations.

Art. 11. Three centres of distribution at least are told off to each Army Corps—one for each division, one for the non-divisional troops, and one for the headquarters. A special plant, the composition of which is given in the circular of the 23rd October, 1882, is set apart for each centre of distribution, and is taken to them by the first victualling convoys.

The provisions are taken to the centres of distribution by the military administration (Art. 7), and issued to the regimental trains, which take them to the troops.

The regimental trains are, for this purpose, relieved of their load of biscuit, which is stored in the depôt of each cantonment by the Officers commanding. This supply is taken up later, and carried by a special auxiliary train, as given in Part III.

Each day an empty section of the regimental trains comes to the centre of distribution to replenish, while the loaded section takes its place in rear of the troops for the evening's or next morning's distribution.

Part III.—Victualling during Active Operations.

Art. 12. During the period of active operations the armies are fed from the rear, the whole of the national resources being drawn upon and worked by

the central administration for the purpose, or live upon the country through which they pass. It may be said generally that these two methods of victualling are always employed together.

In Armies and Army Corps it devolves upon the Officer Commanding, instructed by the Intendance as to the resources of the country and the supplies concentrated in rear, to decide upon and order daily the mode of victualling and of replenishing the stores of the principal fractions of his command, and to tell off to each of these fractions, as well as to the administrative services, the zones for requisition and supply by purchase.

The action of the Central Administration and Army Administration is limited to the station magazines (depôts formed generally on railways), from which are drawn as required the stores therein concentrated by the War Minister.

The great importance attaching to the regular working of these depôts has necessitated that Chapter I of this part should be devoted to its description.

Chapters II and III deal with the revictualling in rear of the Army, for which purpose the station magazines are the chief bases, and with revictualling from local sources.

Chapter IV is devoted to the organization and working of the meat supply.

Chapter V explains the normal operation of the food supply services during the advance, in battle, in retreat, and when stationary.

Lastly, the special duty of the independent divisions of cavalry. The great liberty of action required by those troops, necessarily scattered along the first line, has rendered necessary particular definitions of the rules to be followed in the various probable cases. Consequently Chapter VI deals with the manner in which the principles laid down in these Regulations are to be carried out by the independent cavalry.

CHAPTER I.—*Organization and Working of the Station Magazines.*

Section I.—Duty and General Organization of the Station Magazines.

Rôle of the Station Magazines.

Art. 13. Station magazines are depôts of a relative stability, in which the Central Administration, disposing of all the national and foreign resources, places at the commencement of the war, and maintains at the required strength, the reserves of food from which an Army is to draw those supplies which would not be obtainable from the country in which it was acting.

"The station magazines not only hold in readiness, at relatively a small distance from the theatre of war, food supplies of all kinds, but they also assure the expedition of matériel and provisions either to the Army or to the interior in the event of evacuation, with the regularity of despatch necessary to obtain a useful result, and to guarantee the security of the supply. They are indispensable intermediaries between the interior and the Army, and the regulators of all supplies."

Conditions to be fulfilled by Station Magazines.

Art. 14. Station magazines should combine as much as possible the following conditions:—

"Good road communications, spacious stations, lines, and buildings, capable of enlargement," situated at a bifurcation of the line and upon one of the

main lines of rail, in order to facilitate the supply of provisions which, sent from all parts of the country, make use of the lateral communications and converge to the main lines.

"Large spaces fit for detraining, with sufficient platforms, sheds for merchandize, shelters, or at least spaces for their construction, with paved or stoned approaches," sidings of extent and in number sufficient to always ensure the freedom of the main lines, "all the accessories for the proper working of the stations, such as water-tanks, turn-tables, cranes, &c."

A distance from the points of concentration of the Army sufficient to ensure freedom of movement in its rear without endangering the provision centre in the event of retreat.

Position of Station Magazines.

Art. 15. "The Minister of War, before the commencement of the campaign, decides upon the station magazines and the Army Corps which each is to supply. During the operations their situation and application may be changed by the Minister. Any alteration of designation or use, or the successive changes which any of them may have to undergo, are notified to the Officers Commanding Army Corps, to the Superior Railway Commission, and to the Director of Field Railways.

"As the Army advances and takes up new bases of operations, new station magazines are established near the new transit stations. In this case the position of the new station magazines is settled by the Commander-in-Chief on the suggestion of the Superior Commission and the Director of Field Railways.

"The modifications thus introduced are at once made known to the Minister of War and to the Officers Commanding Army Corps, as well in the interior as in the field.

"These changes do not generally necessitate the suppression of the original station magazines established at home in rear of the first base of operations, which then supply the reserves in the second line, and act as regulators for movements towards the interior in case of evacuation or retreat.

"The station magazines formed in the theatre of war are intended to receive provisions and matériel collected on the spot, or coming from the interior and the frontier station magazines."

Provisions.

Art. 16. The provisions to be held in readiness in station magazines for the troops to be supplied are generally as follows :—

15 days' flour.
2 days' biscuit.
15 days' groceries (rice or vegetables, salt, sugar, and coffee).
3 days' preserved meat.
15 days' corn.

"These provisions are intended, no matter their source, for the service of the whole army, without regard to corps.

"The only exception to this rule is with regard to the baggage and matériel belonging to each corps."

Situation of Provision Depôts in Peace Time.

Art. 17. The establishments to be set up in station magazines only admit of sheds, marquees, and store-rooms of a temporary description, sufficiently strong to ensure the preservation of the provisions for a few months. These shelters are only erected at the time of mobilization.

Consequently in peace time the provisions are placed in special magazines, the locale of which is settled by the Minister.

Managing Staff.

Art. 18. Each station magazine is the seat of an Etappen Commission, composed as follows :—

"A Field Officer of the territorial army as Etappen Commander, a Military Commissary in charge of the direction and general superintendence of the service.

"A Captain and a Lieutenant or Sub-Lieutenant of the territorial army, as assistants, helping the Commissary in all the details of the service.

"An official of the military intendance in charge of the administrative services of the station. Through him are sent to the responsible Officers of the administration, all orders concerning them.

"An agent of the railway companies, styled Technical Commissary.

"A sub-officer or corporal of the territorial army as secretary.

"The station magazines established within the base of operations take their orders administratively from the Corps Intendant in the territorial *arrondissement* in which they are situated. Those established beyond the base of operations are under the orders of the Chief Intendant of the Army."

Executive Staff.

Art. 19. The execution of the service is carried out under the direction of the Etappen Commission by an Auxiliary Staff, which includes—

"An Officer and an Assistant Officer of Administration belonging to each of the following services : Hospitals, Provisions, Clothing, and Camps.

"Military artificers and hospital attendants in sufficient numbers.

"This staff is under the direct orders of the Officer of the Intendance. The responsible Officers of the Administration have, however, to comply with urgent orders which may be given to them by the Military Commissary, referring the matter as soon as possible to the Military Sub-Intendant.

"An Assistant Engineer Officer.

"A special staff for the matériel belonging to the engineer service, composed of a sergeant, two corporals, and eight sappers.

"An artillery guard furnished by the grand park.

"A special staff for the artillery matériel, composed of a Quartermaster, a bombardier, and ten gunners furnished by the foot battery attached to the grand park. This staff will be detailed for the service by the Officer Commanding the grand park.

"The Military Commission has besides under its orders a detachment of the territorial army which furnishes auxiliary workmen as required.

"It has also at its disposal the break-down gangs belonging to the station, whose strength is regulated by the railway companies according to the importance of the operations.

"If the station magazine is at the same time a halting place for meals, the detachment of clerks and workmen belonging to the Military Administration, the number of which is settled by the Regulations of the 9th March, 1883, referring to the victualling of troops during strategic movements, is placed at the disposal of the Commission."

Assembly of the Staff.

Art. 20. The Military and Administrative Staffs of the station magazines should be at their posts on the day fixed by the Minister for the mobilization.

Sheds and Magazines.

Art. 21. The sheds and storehouses are either those belonging to the station, or are put up as soon as the mobilization commences, "on ground selected by the Superior Commission and the railway companies. The latter have to carry out the work."

Should the space furnished by the sheds and storehouses be found insufficient, tents or tarpaulin may be used, a supply of which is kept in readiness in those places where in peace time provisions are stored.

"The sheds and magazines are arranged separately by services (artillery, engineers, hospitals, provisions, clothing, camps, and baggage of corps)."

In anticipation of strategic movements necessitating a withdrawal from a station magazine of the supplies for an Army Corps other than those which have been told off to it, it will be expedient, whenever possible, to extend the supplying radius, to enable as much as twenty-five days' supplies to be collected for the normal effective strength of the corps to be supplied.

Matériel.

Art. 22. A special plant for station magazines is, in accordance with the circular of the 23rd October, 1882, collected in peace time in the provision depôts. It is taken there at the same time as the provisions. These stations receive, besides, the plant belonging to the Army Corps of the active Army, which is sent off to the stations at the same time as the troops.

Lastly, general reserves of appliances, collected at certain points in rear, allow the rapid replenishing of the matériel of the station magazines, and of that of the Army engaged in active operations.

Section II.—Working of the Service.

1st. Transport of *matériel* and provisions from the interior to the station magazine.

General Rules.

Art. 23. "The rules which regulate the ordinary transport of matériel and provisions, and which are explained in the first part of the orders of the 1st July, 1874, are applicable to strategic movements within, as well as beyond, the base of operations, with the exception, however, of modifications, which are given hereafter.

"From the day of the order for mobilization, the military authorities are forbidden to give any orders concerning transport to the stations.

"All demands for the transport of the various services of the War Ministry and the territorial authorities are addressed in duplicate for each separate service and for each station to the Superior Railway Commission, which arranges them in the order of urgency, and returns them, one to the authorities from whom they come, the other for the information of the railway companies, after having given the classification, number of the station, and the date when the transport can take place.

"The order for the movement is then settled by the competent authority, who decides upon the speed to be employed.

"Later on, the Superior Commission reserves to itself the right to name the stations which may be reopened without interfering with the general execution of the service for the reception of direct orders for transport.

"The service is carried out by the companies, according to the time-tables, under the direction and on the responsibility of the Superior Commission, assisted by the Railway and Etappen Commissions.

"All the matériel produced in the territorial region of an Army Corps and belonging to that corps is sent to the station from which the corps starts, under a permit addressed to the responsible Officer attached to the Etappen Commission sitting at that station, the loaded carriages being sent on as they arrive without unloading.

"This movement, however, constitutes two distinct transports or journeys, of which the etappen starting station is the intermediary, and each journey requires a separate way-bill.

"It is the same for the convoys from the station magazines towards the interior of the country.

"A letter warning of the despatch of the convoy is sent to the Officer of administration at the station magazine.

"A duplicate of this letter is sent to the official in charge of the etappen starting station through the Commissary of that station.

"Each railway van has on the outside a placard stating the nature of the load, the name of the starting station, and that of the station to which sent."

Service on Arrival.

Art. 24. The Etappen Commission of the station magazine has to see that the main line is kept permanently free and open.

"As a general rule the matériel and provisions destined for the Army, whether they come from starting stations or from any other source, are only sent to station magazines, where they should be at once detrained.

"The agents of each service at once sort out, receive, and warehouse the matériel.

"The work of loading and unloading the vans is done by the ordinary porters of the railway companies under the direction of the Etappen Commission; in the event of insufficiency, with the help of soldiers or labourers drawn from the population, and placed under the orders of the stationmaster at the charge of the railway company."

Exception to the Rule for Detraining.

Art. 25. As a rule, therefore, provisions and matériel sent from the interior to the station magazines should be unloaded on arrival in order to avoid the accumulation of carriage and the crowding sure to arise from the delay more or less prolonged of the trains beyond the time absolutely necessary.

"However, when it is found necessary to send off immediately trains of provisions or stores, or when, in order to keep pace with the ordinary demand from the Army for provisions or matériel, on the arrival of loaded trains at the station magazines it will be found advantageous to utilize the whole or part of their loads for the convoys to be sent on to the advanced etappen stations. For the sake also of rapidity and facility of movement it will be as well to abstain from unloading those carriages which, from the nature of their cargo, might be included in the trains to be sent on the same day to the Army."

"These arrangements should always be observed with regard to the matériel for the siege parks of the artillery and engineers, which cannot be considered as provisions."

The same rules are to be observed, whenever necessary, with regard to consignments to the interior in the event of evacuation and retreat.

Emergency Trains.

Art. 26. "To ensure, at the most advanced line, those supplies of warlike

stores and provisions which are necessary in all cases," the General Officer Commanding directs the railway companies, in conjunction with the Superior Commission, to take "the necessary measures to have, at the most, two or three loaded trains ready on each line in advance of the station magazine the nearest to the Army.

"These loaded trains form movable magazines, which are called emergency trains (*en cas mobiles*).

"These emergency trains should be replaced by others as soon as the first have been emptied.

"Vans so employed are accounted for by the military agents, as well as by those of the railway companies, to enable the latter to charge, according to the approved scale, for those vans which should be at their disposal."

Accounts.

Art. 27. The books to be kept at each station magazine by the official in charge of each service are :—

1. Those relating to matériel—

   A day-book ;
   An annual register, in single entry, of the management up to date ;
   A register of receipts, with counterfoils ;
   A general register of articles which are not included in the list of matériel ;
   A forwarding book ;
   A register of packing materials used in making up the packages ;
   A book for provisional receipts.

2. Those relating to cash—

   A journal of receipts and expenses ;
   A daily check register ;
   An account of advances received.

Statements of Condition.

Art. 28. The Military Sub-Intendant receives from the responsible Officers of the services over which he has control a statement of the condition of each magazine, detailing the existing resources. He forwards these statements to the Military Commissary, accompanying them with a general return giving the importance and the movement of the various supplies for the administrative services as well as of the regimental baggage.

"The officials in charge of the artillery and engineer services forward to the Military Commissary similar statements of the matériel of these arms.

"The Military Commissary forwards daily these returns to the Commander-in-Chief of the Army, who informs the Intendant of the Army, and if necessary the Officers commanding those Army Corps affected. Should the Officer Commanding-in-Chief think it necessary, he may direct that a copy of these returns or an extract therefrom be sent direct by the Military Commissary to the Commandants of Army Corps."

Reconsignment to the Army.

Demands for Consignments and Orders for Transport.

Art. 29. "The station magazines transfer the matériel and provisions to the Army Corps, or to the magazines formed in advance of the line of operations."

The General Commanding-in-Chief receives daily the demands for stores and provisions required by the different arms; the Chief of the Staff forwards them, indicating the order of their despatch to the Committee of Field Railways, by whom they are in turn sent on to the Superior Committee.

"This committee subsequently gives the necessary orders to the Line and Etappen Committees.

"The supplies are sent by rail, at a speed specified in the time-tables or by special instructions issued by the Superior Committee to the transition station.

"Beyond the transition station the speed of the trains is regulated by the Department of Field Railways, between which and the Superior Committee a constant exchange of time-tables is made."

Thus, in principle the Etappen Committee of a station magazine receives all orders for transport through the intermediary of the Superior Committee, which, however, has, in urgent cases, to carry out the orders sent direct by the Department of Field Railways on its own responsibility.

However, in practice, from the commencement of hostilities, the Officer Commanding-in-Chief decides upon the articles to be kept in readiness at the front stations of the etappen line, and, save in exceptional cases, when once the movement of the trains has been arranged the demands for supplies may be sent direct by the Officers Commanding Army Corps to the station magazine which serves them, or generally the Etappen Committee at the foremost station informs the station magazine of its wants to enable the latter to forward sufficient to keep the former amply supplied.

Conduct of the Transport.

Art. 30. All convoys destined for an Army Corps are sent from the station magazines to the foremost etappen stations used by that corps, by the Department of Field Railways.

"The Military Commissary sees that the matériel and provisions are sent off in the trains set apart for the purpose by the Superior Committee.

"He has delivered, at the proper time, to the Military Sub-Intendant by the Technical Commissary the carriages necessary for the daily services in his charge.

"The Military Sub-Intendant sees that the trains are made up in accordance with the orders he has received, bearing in mind that generally groceries (rice, salt, sugar, and coffee) may, with advantage, be packed in separate parcels in the same vans, whereas it is advisable to load carriages separately with the other provisions (preserved meat, biscuit, bread, flour, corn, and liquids)."

Convoy Railway Guards.

Art. 31. All trains sent from station magazines, as well as those which might pass through them, are placed in charge of railway guards furnished with warrants for their personal transport, who retain charge until arrival at their destination.

The railway guards are responsible for the freight. They receive a daily allowance fixed by the Minister. Should it be found necessary to leave one or more vans on the way, one of the guards would remain with them to ensure the prompt despatch of their loads.

For the transport of cattle, drovers accompany the guards.

Way-bills.

Art. 32. For each convoy from the station magazine to the Army the

forwarding agent makes out an invoice, according to services, in duplicate. In it are entered the number of each van, its freight and destination.

The two copies are given to the guard, who hands one to the official receiving the convoy and brings back the other receipted.

Schedule of Freights.

Art. 33. The way-bills are entered in a schedule (Form No. 10 of the Regulations of the 1st July, 1874), in lieu of the ordinary form of way-bill. This schedule is made out in duplicate, certified by the stationmaster or his deputy, countersigned by the Officer of the Intendance, or, in his absence, by the military member of the Etappen Committee ; it is then signed on taking over charge by the railway guard.

At the transition station one copy is given to the stationmaster, after signature by the military member of the Etappen Committee, to certify to the carriage up to that point.

The other copy is signed by the same official as authority to proceed, and remains with the train up to destination.

"The schedule, which had been given to the stationmaster of the transition station, is kept in support of the transport invoices made out by the railway companies as proof of the service performed. The other handed in at the station of destination is sent to the military section of the Field Railway Department."

Trains passing through the Station Magazines without Unloading.

Art. 34. When a train, loaded with provisions or other stores, passing through a station magazine is, exceptionally, without unloading, sent on beyond the base of operations, as in the case mentioned in Art. 25 of these Instructions, the way-bills accompanying it are withdrawn by the receivers and discharged as for work done. After rapidly looking over the contents without unloading, the responsible officials make out at once from the originals new way-bills as stated in Art. 32. In this particular case, the inspection of the stores having been rapidly made, the new bills are headed "urgent re-expedition."

Case when the Station Magazine is situated beyond the Base of Operations.

Art. 35. When the station magazine is established in the theatre of war itself, the reception, storage, and re-expedition of stores and provisions to the stations at the head of the etappen lines are carried out according to the rules given below for station magazines situated within the base of operations.

CHAPTER II.—*Revictualling from the Rear.*

Art. 36. Revictualling from the rear consists in drawing, by the means open to all armies in the field, either from the station magazines supplied by the central administration, or from the depôts formed by the Army administration beyond these station magazines, all that the regions occupied by the Army cannot furnish.

Section I.—*Means of Execution.*

1. Personnel.

Art 37. The staffs for the direction and execution of revictualling are in general under the military authority.

Staff for Direction.

The officials of the military intendance.

Executive Staff.

The administrative Officers of the Intendance attached to Army Corps, to the headquarters of Armies, and to the services in rear.

The following assist equally in the supply service under the military authorities :—

Officers belonging to regiments and headquarters performing Commissariat duties.

The men of the Transport Corps, who are placed by the military authorities under the Administrative Officers of the various services.

The permanent staff and the drivers of the auxiliary transport train.

Art. 38. The following also, in part, assist in the victualling service :—

The Etappen Committees, the Military Committees of Field Railways, and the Officers in charge of etappen lines, according to the Regulations of the 1st July, 1874, concerning transport by rail, and to the provisional regulations for the etappen service.

2. Matériel.

Art. 39. The Ministerial regulations give in detail the matériel for Army Corps, and headquarters of Armies in the field.

For the purpose of distribution corps receive no other scales than those included in the appliances (*petit outillage*) furnished to Commissariat Officers. Moreover, bread is counted, boxes of biscuits show the net weight, rice and salt are given out by messes, and sugar is issued by guess.

Means of Transport.

Art. 40. Each Army Corps is provided with three administrative trains (*convois*), one per division of infantry, and one for the headquarters. Each of these administrative trains, horsed by the military train, carries four days' provisions for the full strength of the troops which it serves.

Moreover, each regiment and battalion is provided with a regimental transport which carries two days' provisions.

Each Army Corps is, therefore, in reality provided with six sections of wagons carrying six days' provisions.

Art. 41. The carriages composing the regimental and administrative trains are of different kinds, viz. :—

Four-wheeled wagons drawn by two horses.

Four-wheeled wagons drawn by four horses.

Auxiliary carts of two or four wheels drawn as much as possible by two horses.

Exceptionally, one-horsed carts, called regimental carts, are still used.

In consequence of the diversity of the carriage, care has to be taken to load them so as to avoid as much as possible the shifting of the loads.

Auxiliary Train.

Art. 42. As the provisions carried by the regimental and administrative trains have always to be within reach of the troops, it is necessary, to carry out the victualling, to make use of an auxiliary train.

Consequently, each Army has with it an auxiliary train in four sections, each carrying one day's provisions.

Each Army Corps section is composed of 150 carts, each carrying on an average 1,765 lbs.

The four sections of an Army Corps comprise, therefore, 600 carriages.

It follows that an Army composed of four Army Corps will have 2,400 carts, or 2,550 allowing for a reserve.[1]

These carts are, during the operations, under the orders of the General-in-Chief, who divides them among the Army Corps as required.

Art. 43. The auxiliary train is formed apart from the mobilization, according to rules contained in a Ministerial regulation.

Each section of 150 carriages forms a distinct administrative unit. Each is designated by the number of the corps to which it is attached, and also by a special number.

Management of the Regular or Auxiliary Trains.

Art. 44. In the field the military intendance has authority over the train, whether regular or auxiliary, forming part of the administrative convoys employed in victualling.

This authority is exercised in each Army Corps by the Intendant of the Army Corps; in each division by the military Sub-Intendant.

For the service in the rear it belongs under the same conditions to the functionary attached to the Officer in charge of the lines of communication. However, the time of starting and the road to follow are settled by the Officer commanding, and if necessary on his authority by the etappen officials.

The etappen troops furnish escorts whenever they are considered necessary.

Section II.—*Mode of Revictualling.*

Art. 45. From the foregoing it follows that each Army Corps has constantly at its disposition six sections of wagons, each capable of carrying one day's provisions, viz.:—

Two sections of regimental transport employed essentially on the march, generally in rear of the troops whom they should be able to overtake during the day, and are always under the orders of the Officers Commanding Corps.

Four sections of the administrative trains. These four sections are seldom together; their arrangement in rear is regulated by the requirements of the supply service, but in all cases one or two sections should be able to rejoin during the day or night. These last follow at intervals of half a stage in rear of the regimental transport.

Following the administrative convoys come the four sections of the auxiliary train, generally at a distance of two marches from the troops.

It is important with regard to the free movement of the troops that this interval, in which are already placed sections of the regular trains, should not be decreased.

Art. 46. On the other hand, the daily provisioning of the troops should be, as much as possible, with bread, biscuit being kept as a reserve for those days when there might be a scarcity of bread. From which it follows that it is necessary—

[1] The effective strength of an Army Corps is 36,000 men and 10,000 horses; the weight of a food ration is 3·3 lbs., and that of a ration of corn 11 lbs., the total weight to be carried by a section is 229,277 lbs., which, allowing 1,764 lbs. per wagon, gives 130 wagons. Taking into consideration the weight of the drivers and others, the supplementary transport and forage, 150 has been fixed as the number of wagons for a section.

1st. To free the regimental and two of the four sections of administrative trains from their original load of biscuit in order to replace it with bread.

2nd. To load with the four days' biscuit thus obtained a special convoy always kept near, and in rear of the Army.

For that purpose will be employed two sections of the auxiliary train, which will march a short distance in rear of the last wagons of the administrative convoys.[1]

Consequently, an Army Corps will have at its disposal for the actual revictualling, *i.e.*, will be able to renew day by day the provisions consumed, six sections corresponding to six days' provisions, independent of the four days' biscuit of the special convoy, and of the two days' provisions carried by the administrative convoys exclusive of their biscuit.

Art. 47. The advanced stations of etappen lines being the points of arrival and of distribution of the provisions forwarded by rail, it is at these stations that the actual victualling begins.

As long as the Army moves by rail the foremost etappen stations will have to be moved nearer to the advanced lines according to the movement of the troops; the distances which provisions have to be sent by road are never very considerable. Moreover, these convoys may in a great measure be helped by means of branches from the main line of rail.

On these conditions the regimental trains will often be sufficient for the transport of the provisions, and as long as the distance between the discharging station and the troops does not exceed 9 miles, the arrangements for the coming and going can present no difficulty; the advanced etappen stations and their adjuncts on branch lines will be the points of distribution.

Art. 48. If the Army halts at a greater distance than 9 miles, the regimental trains will not suffice for the transport of the provisions from the distributing station to the troops. The two sections of the administrative trains, freed from their load of biscuit, will commence working, and will carry provisions from the station for a distance of 15 miles, where the regimental trains will receive them and take them for a further distance of 9 miles, say in all 25 miles. However, if the Army, being at a distance of 15 miles from the station, has to march on the following day a further distance of 15 miles, the regimental transport, which has followed the troops in the first march and assured its supply on arrival in camp, will not be able in the next twenty-four hours to cover the 33 miles necessary to obtain provisions from the administrative trains 9 miles in rear, and then rejoin the troops at the second halt in time for the evening distribution. The greatest distance at which troops can be supplied on the march is therefore 15 miles.

Art. 49. If this distance is increased it becomes necessary to employ the two available sections of the auxiliary train to ensure the continuance of supplies. They carry from the station to a distance of 15 miles, where they are met by the administrative train, which transfers the supplies and takes them on for another 15 miles. The regimental trains then take them on to the troops, to the 40th mile from the station, unless they are on the march, when the supply service will be limited to the 30th mile from the station.

Art. 50. If the distance still increases it will be necessary to organize requisitioned transport in order to bring the auxiliary train into communication with the etappen station. This duty devolves upon the military subintendants of the etappen stations, and upon the Officers in charge of the

[1] The net weight of a biscuit ration being 25·9 ozs., a day's biscuit for an Army Corps weighs 58323·7 lbs., and requires 33 wagons, but taking into consideration the weight of the drivers and others, it is better to allow 50 wagons, say 200 wagons or one section and a third for the four days' biscuit of an Army Corps. The 100 remaining wagons will be loaded with a day's corn and preserved meat.

lines of communication in accordance with the regulations concerning the etappen service.

In this case it must be borne in mind that to ensure the regular transport it is necessary that the convoys should have periodically a few days' rest for the repair of carriage and the recovery of the teams ; it is as well to arrange for five sections of requisitioned carriage to ensure the transport for two stages coming and going.

On these conditions the Army will be supplied for a distance of 70 miles from the station, if halted, or 60 miles if on the march.

Art. 51. It must not be supposed, however, that this distance is the extreme limit to which an Army can move without imprudence with regard to the advanced supplying stations.

In fact, from the foregoing it might be inferred that the Army was supplied entirely from the rear, whereas if it is operating in a fairly rich and populated country, the local resources will furnish at least the half of the necessary provisions, so that the administrative and other trains can be sub-divided and worked by relays, each doing 30 miles.

On the other hand, the field bakery of each Army Corps, which marches about 30 miles in advance of the administrative convoys, will be able even during the march to supply half the fresh bread required, the convoys from the rear supplying them with flour, which will greatly facilitate the service.

It may, therefore, be taken that in the normal conditions of a European war an Army could if necessary, but for a very short time only, be supplied to a distance of 125 miles from its last railway magazines. In the event of sudden accident there would still be two days' provisions on the administrative sections carrying biscuit, and four days' provisions and one day's corn on the special convoy.

Art. 52. If the Army after a success is required to move rapidly far from its base in countries the supplies of which have been exhausted, and where the railways have been destroyed, it will be indispensable to ensure the supply to form on the lines of communication successive magazines, which would be chiefly supplied from the rear by means of a largely increased requisitioned transport while the railways were being repaired, which duty should be undertaken at once.

The establishment of a line of magazines is always attended to by prudent Generals.

CHAPTER III.—*Victualling on the Spot by Working the Local Resources.*

Section 1.—*General Principles.—Principle of Victualling on the Spot.*

Art. 53. The usual conditions, by reason of the difficulty of maintaining a sufficient supply from the rear, necessitate generally the direct working of the local resources.

However, political considerations, and in all cases the necessity for husbanding the resources of the country in case of retreat or of the passage of other Army Corps, cause to be kept within proper limits the application of this method of supply.

Consequently it behoves the General in Chief Command, who alone can understand the position of the Army with regard to the country occupied, to arrange in what way the local resources are to be worked.

In principle, within the limits of the Regulations, each unit should draw from the country occupied all that can be obtained from it, what is wanting is demanded of the administrative convoys, and from them to the convoys in the rear.

Zones of Requisition.

Art. 54. In order to ensure, without confusion or competition, the working of the local resources, it is necessary to arrange exactly each day those zones of the country occupied in which are to operate the officials who, on the one hand, have to provision the divisions and brigades, and on the other those of the superior administration of the Army Corps who have either to supply the convoys or to organize etappen magazines in rear of the Army.

It is necessary even in cantonments that the regimental and administrative agents should operate at distinct and clearly-defined points, in order not to impede their operations, and endanger the service by drawing too much from one locality while neighbouring centres would remain free.

Consequently, when it is decided to live on the country, as is usual, Officers Commanding Army Corps, Divisions, and Brigades, when allotting the cantonments or bivouacs to be occupied by the troops under their orders, should point out to each a zone for requisition in which it alone will act.

This zone of requisition is limited to the cantonments themselves, if they are of sufficient extent; if they are contracted, and do not offer sufficient resources, the zone of requisition is extended to the rear, to the flanks, and even to the front of the positions occupied. If, however, it is found impossible to extend the zone of requisition, the supplies forthcoming must be used by a part of the unit specially detailed while the remainder is fed by the convoys from the rear.

The administrative officials of all ranks receive precise and detailed information of the orders of the Commander-in-Chief, and thus know how to act.

Means to be Employed.

Art. 55. The means to be employed for the profitable working of a country are :—

Purchase in open market.

Requisitions, according to regulation at home, by force in an enemy's country. Purchases for ready money attract sellers and facilitate the collection of provisions; it is better to deal in that way than by requisition, either at home or abroad, the latter method in fact leads to the concealment of supplies, necessitating search with a considerable loss of time, and only gives a very incomplete and uncertain return.

It is also better, according to European conditions, that the Commander-in-Chief should demand money contributions, the only war tax which can be equitably divided, and which populations can support with the least difficulty, and to employ the funds thus obtained in the daily purchase of the necessary provisions.

Section 2.—*Execution of the Service, Staff and Means of Action.*

Art. 56. The staff occupied in the working of the local resources, apart from the actual administrative agents, comprises the Officers in charge of the commissariat of regiments and headquarters (regimental commissaries), according to the Regulations of the 17th March, 1882.

The means of action at the disposal of this staff are :—

For the Administrative Services.

1. Advances of money made to the responsible Commissariat Officers.
2. The transport belonging to the administrative and auxiliary trains, and such as may eventually be formed.

For Regiments, &c.

1. The funds at their disposal which may be used for the payment of purchases made by the regimental commissaries. Advances thus made from regimental funds are repaid to the paymasters by the Officers of administration as stated in Art. 18 of the Regulations of the 17th March, 1882.

2. The regimental carriage belonging at all times to each regiment or battalion, and eventually the wagons obtained by requisition.

Art. 57. The rules to be followed by the administrative agents, concerning the mode of operation, and the vouchers to be produced, are found in the regulations in force.

For regiments and headquarters they are stated in the above-mentioned Regulations of the 17th March, 1882, completed as stated in Arts. 58, 59, and 60.

Duties of the Regimental Commissary during the Period of Mobilization.

Art. 58. From the first day of the mobilization the regimental commissary inspects the transport and becomes answerable for it.

He loads the carts with the 1st line provisions over which he keeps a constant watch. If necessary he issues these provisions and takes steps to replace them at once. In cases of loss or damage he reports to the sub-intendant or his deputy the cause thereof. He is the agent of the regimental council of administration for the safety and preservation of the 1st line provisions for which the council is responsible.

He takes the place of the Captain charged with the distribution of stores during the time of mobilization, and superintends the issue of haversack provisions to those men of companies not previously supplied.

Duty during Strategic Movements.

Art. 59. The provision wagons having been taken to the station and placed on trucks by Officers detailed for that duty, and the feeding of the troops during strategic movements being assured at the halting stations by the military administration, the intervention of the regimental commissary is not called for during this period.

He starts with the first train which takes men of his regiment. Before leaving he receives from the Officer commanding information of the places where each unit will be quartered. On his arrival at the point for detraining he is informed by the military etappen commissary of the centres of manufacture and distribution for his Army Corps.

Duty during the Period of Concentration.

Art. 60. On arrival at the cantonments the regimental commissary visits the centres of manufacture and distribution, he reports his arrival to the sub-intendant of his corps, who gives him all the necessary instructions, and he also puts himself in communication with the administrative agents in charge of the distribution.

During the whole of this period he is occupied with the daily supplies made to the troops by the administrative services; if necessary he assists in the requisitions or purchases to be made, of cattle, hay, straw, and fuel.

He unloads the carts of their biscuit, and employs them between the centres of distribution and the cantonments.

Duty during Active Operations.

Art. 61. During active operations the regimental commissary acts according

to the general rules contained in the Regulations of the 17th March, 1882, as well as the instructions given in the fifth chapter which follows.

CHAPTER IV.—*Supply of Meat to the Army.*

Art. 62. The service for the supply of meat is organized by armies.

With each Army is a contractor answerable for the purchase, transport, and management of cattle in rear of the lines of the Army. He delivers to the Officers of the administrative convoys belonging to the several Army Corps a sufficient number of animals to ensure the supply of meat to the troops for two days.

He may be held answerable for the full execution of the service, both slaughtering and distribution, at those points in rear which are in his charge.

Supplies.

Art. 63. The contractor is bound to maintain within reach a supply of cattle for ten days for the whole of the Army, which supply is divided as hereafter explained, between the stores and parks of the Army and Army Corps.

He is allowed every latitude in the purchase of cattle. He may not, however, work in the zone occupied by the Army without the consent of the Commander-in-Chief.

Cattle Depôts.

Art. 64. Cattle pens are established in the immediate vicinity of the railway used for supply purposes, and are placed conveniently along that line so long as it is used for supply, and at settled points along the lines of communication when the Army moves by road only.

The Commander-in-Chief approves of the situation of these depôts and decides upon the size and composition of each. Their total supply of live cattle equals four days' provision of meat for the Army.

Cattle Park for an Army.

Art. 65. At a distance of two days' march from the front, an Army park is formed which keeps within reach of the troops a two days' supply of cattle for the total effective strength.

This park, as well as the other depôts, is the sole property of the contractor. He is, however, supervised by an Officer of the administration as well on the march as when stationary.

This Officer sees that the supply of cattle is kept up to full strength. He transmits to the contractor's assistant the orders for delivery and sees that they are carried out. He inspects the animals, and has them weighed before delivery to the Army Corps.

In case of the absence on duty or without leave of the assistant, he sees to the continuance of the supply at the contractor's risk.

The successive positions of the Army parks are settled by the Commander-in-Chief.

Army Corps Parks.

Art. 66. A park for each Army Corps, belonging to the contractor, is kept as much as possible at a day's march from the troops, and has a supply of cattle for four days for the effective strength of the Army Corps.

The arrangements for superintendence by an Officer of the administration and for the selection of position are the same as those for an Army park.

Herds of the Administrative Convoys.

Art. 67. Each administrative convoy of an infantry division, or headquarters of an Army Corps, is provided with a herd of cattle for a two days' supply.

These herds are in charge of the Officer of administration, who is answerable for their safe guard and management, their slaughter and distribution. This Officer has an assistant for the management of details.

Delivery of Cattle.

Art. 68. The forwarding of cattle from the Army park to the Army Corps parks, and from them to the administrative convoys, takes place daily and regularly according to settled arrangements, which may only be altered by order of the Commander-in-Chief, or in urgent cases upon the direct demands of Officers Commanding Army Corps, who report to the Commander-in-Chief.

The Officers of administration attached to these parks see to the regular transmission of the cattle necessary to take the place of those killed for supply. They are for this reason kept constantly informed of the movements of the Army Corps.

The action and, consequently, the material responsibility of the contractor ceases with the delivery to the official of the administrative convoy or to his substitute.

Slaughter and Distribution.

Art. 69. The beasts are slaughtered and the meat distributed every day in each infantry division or headquarters of Army Corps, under the direction of the Officers of administration. When necessary, however, live cattle may be issued to the troops, in which case the regiments slaughter for themselves, by means with which they are provided.

In the event of the administrative staff being too weak to supply Officers for these duties, or from any other cause which would necessitate the whole service being carried out by the contractor, he may be called upon to slaughter and issue direct to the troops.

This last method may be practised with advantage when the Army is halted for a long time.

Contractor's Employés.

Art. 70. Those employed by the contractor must be of French nationality, except by special permission of the Commander-in-Chief.

Exclusive of the workmen and drovers attached to the depôts and parks, they are :

The contractor or his representative with the headquarters of the Army.

An overseer with each Army Corps.

A managing overseer with each depôt or park.

The gendarmerie with armies has over the contractor's personnel those police powers given by the regulation with regard to all non-military followers of the Army.

Auxiliary Means.

Art. 71. When, by reason of the requirements of the campaign, the Commander-in-Chief finds it necessary to have recourse either to billeting, to the issue of preserved provisions or salt pork, to supply by requisition, by direct purchase, or to the use of captured supplies, the contractor can make no claim for indemnity.

Specification.

Art. 72. A specification special to the contract for the meat supply of an Army ensures the working of the service on the general conditions which have been given.

Special Arrangements at the Time of Concentration.

Art. 73. The supply of meat to the troops on arrival at the points of concentration is effected by local purchases or by requisition until the regular service is in working order.

During this period the contractor collects his personnel, makes his purchases, and takes the cattle to the settled points, so that as soon as the railways are free the herds can be removed by special trains and taken without unloading to the places selected for the formation of depôts and parks.

Cattle trains are provided in the transport arrangements for the mobilization from the 15th day.

Chapter V.—*Working of the Victualling Service during Active Operations.*

Section I.—*During Marches.*

Marches to the Front.

Art. 74. When an Army Corps advances, as a general rule, the local resources should be drawn on, and the convoys and supplies from the rear should only be used to supplement them, the commissariat and administrative Officers should then, unless contrary orders are issued, employ the most effective means to work the country occupied.

In these circumstances, the cavalry, which moves in advance of the Army Corps, can be of great use to the troops following, either in transmitting to the communal authorities the orders for requisitions from the military authorities, or by collecting the local resources and sending them to the Army. This last measure may be advantageously employed in localities situated on the flanks of the Army, and where the troops are not to be halted.

Art. 75. During the marches to the front, the military sub-intendants and the Commissariat Officers precede the troops as much as possible in order to make their purchases and requisitions before the arrival of the Army.

A detachment of workmen belonging to the administration, taken from the administrative convoys and composed for the greater part of bakers and forage-binders, under an Officer of the administration, marches with the advanced guard, and is at the disposal of the military sub-intendant, who employs them as required either in making bread or collecting and rationing forage, and in helping by every means the action of the Commissariat.

This detachment moves and remains with the troops, no matter at what distance from the administrative convoy they may be.

Art. 76. When on the march the advanced guard is followed by a herd equal to one day's meat for the effective strength to be supplied. With this herd is a party of workmen of the administration composed of butchers and drovers, taken also from the personnel of the convoys, under an Officer or non-commissioned officer of the administration.

On arrival in camp the herd is slaughtered at a point detailed in orders.

As soon as the regimental commissary has requisitioned supplies from the civil authorities, or has arranged for their purchase, he calls for the necessary

carriage to fetch the meat for each camp. On the return of these carts the meat is issued to the troops without delay, in order that it may be cooked in the evening.

Art. 77. From the foregoing it will be seen that during operations the troops can only cook once a day.

Generally, unless ordered to the contrary, those fractions which start before 9 A.M. have a light meal (coffee, preserved meat, or cold meat cooked the previous night) before starting, and cook in the evening. Whereas those who start after 9 A.M. cook and have a hot meal before starting, and have a light meal in the evening.

Art. 78. Every day on arrival in cantonments, the regimental commissary, according to the local resources of the zone to which he has been told off, requisitions or buys the necessary provisions, fuel, and forage.

Forage and fuel not being carried by the administrative convoys, are of necessity obtained by requisitions, or are bought on the spot. If necessary, by order of the Commander-in-Chief, wood is cut, under strict supervision, to prevent disorder.

With regard to provisions, according to the orders given and the resources, they will either be requisitioned for the whole effective or only for a part, which, moreover, will gradually become smaller as the concentration goes on, and the quarters occupied are drawn nearer together; in default of the provisions named in the Regulations, equivalent provisions will be issued.

In the evening, or at latest next morning, the carts will be loaded with articles obtained by requisition or purchase, what is wanted to complete, if any, is taken from the administrative convoys. For this purpose the military sub-intendant, on receipt of the necessary information, orders the Officer in charge of the administrative convoy to forward the wagons required to some central point near the camps, where the regimental transport can reload. Notice of this is given to each corps.

This is usually done at night or in the small hours of the following morning. As soon as reloaded the regimental transport resumes its place in the order of march.

Pursuit.

Art. 80. During a pursuit, the rapidity of movement does not allow of supplies from the rear coming up with the troops; consequently all that is required for the troops has to be obtained on the spot. It becomes necessary, therefore, each day to assign to the troops a sufficiently extended zone of action.

The most preferable method will be that of billeting, the inhabitants feeding the troops, thereby ensuring greater liberty of action and the indispensable rest.

Retreats.

Art. 81. During retreats the positions of the component parts of the column are reversed, the wagons of the administrative convoys and even those of the regimental trains move at the head and as far to the front as possible.

During the first days of a retreat it is almost impossible to work the local resources. If, however, marching with any degree of security the men may be billeted and fed by the inhabitants.

The surest way to supply the wants of the troops will be to establish on each of the lines of retreat, in places fixed upon beforehand, and which become points of obligatory passage, depôts containing supplies for two days, with a staff for their distribution.

If the troops happen to bivouac at one of these depôts, the distribution will be made in the evening. If the column has to move on, a halt is made for

distribution, the rear guard holding the enemy in check for an hour or two. The residue is left with a few men for the rear guards, or is taken away on country carts, or is abandoned, but in cases of absolute necessity only.

Art. 82. These depôts will be established on the several lines of retreat by the administrative convoys which move at the head of the columns, helped, if possible, by the etappen officials. The orders concerning these depôts should be very precise, and should be strictly carried out.

When the army is thrown off the lines thus prepared, it must of necessity spread itself in order to live on the country, and must use every means to force the inhabitants to supply the wants of the troops.

Art. 83. In all cases the feeding of rear guards will be very difficult. Provisions should be sent to them on carts, or, if possible, provisions should be stored for them in places prearranged. With that object the most attentive foresight is necessary in order to profit by circumstances, and it becomes a subject for the most serious consideration of Officers Commanding Army Corps.

Section II.—*During Action.*

Art. 84. During a battle the only means of subsistence are those in the haversack.

When an engagement may be foreseen, a special distribution of biscuit and preserved meat is made in order to replenish the haversack provisions which may have been consumed.

On the day of the battle the regimental trains are generally left at a certain distance in the rear. They replenish their stores from the first section of the administrative convoys.

If the troops sleep on the ground, during the night the regimental trains and, if necessary, a section of the administrative convoys are sent forward in order to issue early in the morning of the day following.

The convoys will then resume their normal positions for the advance.

Section III.—*When Halted.*

Art. 85. As soon as a fraction of the army halts, even for an uncertain time, it is advisable to resume as soon as possible the usual methods of supply, that is to say, by direct issue from administrative magazines which are established and supplied from the surrounding country and from the rear.

Bread is made locally in the field bakeries and country bakehouses, and, if necessary, other bakeries are constructed.

If the halt is to be for any length of time, the etappen service will be pushed on till it joins the Army, and will assist in the supply of the first line

Chapter VI.—*Supply of the Independent Cavalry.*

Section I.—*General Arrangements.*

The independent cavalry, as a rule, live on the country.

Art. 86. The independent cavalry when scouting should, as a rule, live on the country. The local resources are worked by the troops themselves, with the help of the administrative services.

When, formed up in divisions, the cavalry eventually takes its place in the lines of the Army, it is supplied in the same way as the troops of Army Corps.

Means of Transport.

Art. 87. In peace time is attached—

1. To each independent regiment of cavalry, a regimental train composed of six wagons, horsed and driven by the regiment.

2. To each battery of horse artillery belonging to the cavalry division, a train of two wagons, horsed and driven by the battery.

3. To the headquarters of the division, a wagon horsed and driven by one of the regiments of the division.

As soon as war is declared, these regimental wagons are gathered together at the centres of mobilization, are loaded with one day's provisions and corn, and are sent on to the points of concentration with the regiments.

On arrival at the points of concentration, the regimental provision trains are, in each division, united in a group forming the reserve convoy of the division. This convoy is placed under an Officer on the active list, who has a sub-Officer and two corporals to assist, supplied from the regiments of the division.

The divisional General disposes of the reserve convoy, according to circumstances; he fixes their successive positions, and is alone answerable for their employment; he detaches, when he thinks fit, whatever carriage may be necessary for the use of the division.

When the division forms up for duty with the Army, the regimental wagons necessarily rejoin those corps to which they belong, and are then employed in the daily distributions in the same manner as those of the Army Corps.

As soon as the division moves forward to resume its scouting duties, the reserve convoy is at once re-formed.

Administrative Convoy.

Art. 88. The divisions of independent cavalry have no administrative convoy in peace time, but they have a staff in readiness for the formation of such a convoy.

When formed up to join the Army, one is made of requisitioned wagons, which are loaded with provisions for four days.

This convoy, which is formed by order of the Commander-in-Chief of the Army, is dismissed or sent elsewhere as soon as the Army moves forward.

Zone of Action.

Art. 89. The supply zone assigned to each regiment, or part of a regiment, is generally determined by the limits of the cantonments occupied and the nearest towns.

All levying upon the resources of one cantonment by the troops which occupy another is strictly forbidden, without special orders from the superior authority.

Section II.—*Working of the Provision Service.*

Art. 90. The working of the provision service varies as follows:—

1. When the independent cavalry is employed on scouting duties.
2. When it is temporarily concentrated in front of the Army.
3. When, having formed up, it works with the Army.

1. *Cavalry when Scouting.*

Art. 91. The daily food supply is assured—

Firstly, by feeding with the inhabitants.

Secondly, by means of purchases or requisitions carried out by Officers commanding regiments, by the regimental commissaries, and by the commandants of squadrons and detachments in the first line.

In default of other means by the distribution of provisions obtained by purchases or requisitions made by the administrative agents, or carried by the reserve convoy.

Art. 92. Provisions and corn are, as much as possible, issued over night for use the next day.

Wood, hay, and straw, as well as fresh meat, are issued daily for use the same day.

Purchases.

Art. 93. Officers commanding detached squadrons supply their men from the cantonment to which they are sent, or from the country in their front, either by purchase or requisition.

Art. 94. For the purpose of purchase, the paymasters advance money to the regimental commissaries of their regiments, and to the Officers commanding detached squadrons. When necessary, on the production of vouchers for the expenditure of the first advance, a second is made.

Officers commanding detached troops receive from their squadron commanders sums proportional to the importance of the duties they have to perform. On rejoining their squadron they account for the same.

The advances are made from the regimental funds. Should it happen that a regiment has not sufficient at its disposal, the chief paymaster of the division advances a sum decided upon by the Officer commanding the division, on the representation of the military sub-intendant, to the regimental paymaster, who gives a receipt for it. A further advance is made upon production of vouchers for expenditure of the first.

The regimental commissary furnishes the squadrons with the necessary printed receipt forms.

As a rule, money advances are not made to any one below the rank of Lieutenant. This rule may, however, be set aside, in the case of squadrons in the front line, where the Officers who may have received advances are authorized to supply with money non-commissioned officers commanding small detachments.

Requisitions.

Art. 95. The regimental commissaries and Officers commanding detachments are provided with books of requisition forms, each form stating the right of the bearer to requisition, and books of receipt forms. Officers commanding squadrons give to their troop commanders receipt form books and as many requisition forms as they may think necessary.

These Officers, if necessary, give to commanders of detachments, or to single men of their troops, receipt forms taken from their books, leaving the counterfoil.

Single men, as a rule, live with the inhabitants. The printed receipts given them only show half day's subsistence ; they are filled up as much as possible by the Officer who gives them or by a non-commissioned officer.

On rejoining the squadron, the troop commanders account for the requisition orders expended, and report exactly the nature and the importance of them.

Detachment commanders act in the same way on their return with regard to the receipt forms supplied to them.

When they requisition, they should enter the quantity of each article, and the hour and place of taking it.

They superintend the execution without interfering in the communal assessments.

Detachments.

Art. 96. Officers commanding detached squadrons have the provisions brought to the outposts and other detachments within their reach, by means of carriage taken on the spot.

Should there be any farms or hamlets near the outposts, the troop commanders requisition them, particularly for wood, hay, and straw.

Main Body of Regiments in the Front.

Art. 97. The Officer commanding a regiment at the front supplies the main body from the locality which is told off to him as cantonments.

He can, if necessary, extend the supply zone in the neighbourhood, but as much as possible on the outward side or to the rear.

The regimental commissary is his agent for execution and supervision.

Whenever possible, the men should be fed by the inhabitants (from four to six men per fire).

With regard to the horses, their provision is generally obtained by requisition.

Single men employed as orderlies for messages are, as much as possible, fed by the inhabitants, both horse and man.

Money, in lieu of provisions, is only granted to these men in very exceptional circumstances, which are left to the discretion of the Officer sending them.

Brigades in the 2nd Line.

Art. 98. In the brigades of the 2nd line Officers commanding regiments supply their men according to the orders given by the brigadier. Wherever there may be an Officer of the administration he should help in the supply service.

The military sub-intendant sets the whole in working order; he sees particularly to the reprovisioning of the reserve convoy when it has been drawn upon. He gives all the necessary information to the regimental commissaries in his vicinity.

The administrative staff may, by order of the Officer commanding, be divided into three sections, one for each brigade, with each of which is an Officer of the administration.

Wherever possible, the bakers and butchers of the neighbourhood are drawn upon, they being, if necessary, helped by the military workmen of the administration.

In communes of average importance (800 to 1,000 inhabitants), it is possible, without overtaxing the population, to call upon them to supply a brigade for one day. In this case the administration has only to provide for the horses.

When a commune which is not occupied is called upon to send contributions to some central point, a few cavalry men are sent to superintend the distribution, returning with the supplies.

When the responsible administrative Officer of the division is not present with a brigade, the detached Officer of the administration acts for him.

2. The independent cavalry is concentrated in front of the Army.

Art. 99. If the concentration is only for a short period, and the local resources will not furnish the daily supplies for that time, the Officer commanding may draw upon the reserve convoy, which is divided into three sections, one per brigade. Instructions to that effect are given to Officers commanding corps and to the sub-intendant.

These brigade convoys, loaded with one day's provisions and corn, and,

when possible, with one day's supply of preserved meat or pork, are accompanied by four or five workmen, for distribution.

The position of the convoys in rear of the cantonments and the hours of distribution are settled by the military authority.

The administrative department buys or requisitions throughout the assigned district, with the assistance of the regimental commissaries; it collects the provisions supplied by the communes, and replenishes the convoy. This replenishing should be carried out at the latest during the night.

For requisition purposes, a cavalry detachment is placed at the disposal of the sub-intendant.

If the concentration is to last, or if the requisition zone is too restricted, the Officer commanding, on the representation of the sub-intendant, takes measures to have the convoy replenished from the rear.

In cases of emergency he requests the help of the Officer commanding the the nearest Army Corps.

3. The independent cavalry is concentrated in the lines of the Army.

Art. 100. When the division of independent cavalry is concentrated in the lines of the Army, the regiments and batteries take back their provision wagons.

An administrative convoy is at once attached to the division, loaded with provisions and corn for four days. This convoy is composed of requisitioned carriage, and is formed by order of the Commander-in-Chief of the Army. As soon as the division moves forward it is broken up. Besides this a herd sufficient for two days' supply for the division is got together. After this the supply of the division is carried out in the same way as that of the other troops.

Note.—All the arrangements contained in this chapter are applicable to brigades of corps cavalry acting singly.

THE ENGINEER ARM IN CONTINENTAL ARMIES.

By Captain W. A. H. Hare, R.E., D.A.Q.M.G.

THE GERMAN EMPIRE.

Introductory.

The Imperial German Army comprises the Army of Prussia proper together with such contingents of other German States as are directly under the War Minister at Berlin, the Royal Würtemberg Army, the Royal Saxon Army, the Royal Bavarian Army, and the mixed Army Corps at present garrisoning Alsace-Lorraine.

The Prussian Army, with the contingents as described above, comprises the Guard Corps, Army Corps I to XI inclusive, and the XIVth Army Corps. The Würtemberg Army forms the XIIIth Army Corps, and the Saxon the XIIth Army Corps. The Bavarian Army forms the 1st and 2nd Bavarian Army Corps. The XVth Army Corps is made up at present of Prussian, Würtemberg, Saxon, and Bavarian troops.

Thus there are 18 Army Corps in all, permanently organized in peace, ready to mobilize and take the field in case of war. Besides these, the numerous cavalry that is not required as Divisional cavalry in each Army Corps would be formed in independent Cavalry Divisions.

The Bavarian Army retains its own uniform, and is only immediately under the orders of the Commander-in-Chief of the German Army, that is to say, the Emperor, in war, but the armies of Würtemberg and Saxony are under his orders in peace and war, and are organized, armed, clothed, and equipped on the Prussian model.

All three have their respective War Ministries at Munich, Stuttgart, and Dresden respectively, and the Officers of these Armies are nominated by their respective Sovereigns.

Thus there may be said to be four Engineer Corps in the German Army, with separate establishments and promotions, in Prussia, Bavaria, Würtemberg, and Saxony respectively.

Part I.—OFFICERS.

Prussia.

The Engineer Arm of the Prussian Army consists of a corps of Engineer Officers known as *das Ingenieur-Corps*, and Engineer troops known as *Pioniere*, or Pioneers. The latter are organized in peace time in battalions, but these are broken up on mobilization. The Pioneers are exclusively officered by Engineer Officers, the Battalion being commanded by a Major, which, nominally at least, is the highest rank to be found doing regimental duty. Besides the Officers doing duty with the Pioneers, there are many others variously employed on fortifications, &c.

Thus the present organization of the Engineer Arm in the German Service is not unlike that which existed in our Service before the Crimean war, when we had a corps of Engineer Officers and a corps of Sappers and Miners, the latter being officered from the former.

The Prussian Corps of Engineer Officers is under a Chief of the Engineers and Pioneers and Inspector-General of Fortifications (*Chef des Ingenieur- und Pionier-Corps und General-Inspector der Festungen*). It is organized in a Staff (*Stab des Ingenieur-Corps*) and Engineer Inspections (*Ingenieur-Inspectionen*). The *Stab* comprises the General and Field Officers of the corps, and the *Ingenieur-Inspectionen* the Captains and subalterns, whether doing duty with the Pioneers or not. Besides the Officers shown under these headings, there are a certain number shown as *à la suite*, corresponding to what the supernumerary or seconded list is with us. All Engineer Officers, except those transferred to the General Staff Corps, no matter how employed, are shown in the Army List under these headings together, and those serving with the Pioneers again with their respective battalions.

There are in addition Reserve Officers, as in the other branches of the Service. These are shown as belonging to the battalions they would be called upon to join in case of war.

THE INSPECTOR-GENERAL OF ENGINEERS AND FORTIFICATIONS, THE ENGINEER INSPECTIONS, THE ENGINEER COMMITTEE, THE BOARD OF EXAMINATION FOR OFFICERS, THE INSPECTION OF MILITARY TELEGRAPHS, AND THE ENGINEER DEPARTMENT AT THE WAR MINISTRY.

The Inspector-General of Engineers and Fortifications.

The Inspector-General has the rank of General or Lieutenant-General (*General der Infanterie*,[1] or *General-Lieutenant*). He is at the head of the Corps of Engineer Officers, the Pioneer Battalions, and the Military Telegraphs. He is a permanent member of the State Defence Commission, and shares with the Inspector-General of Artillery the general superintendence of the School of Artillery and Engineers at Berlin. His office is in Berlin. He is assisted by a Chief of the Staff—a Colonel or Lieutenant-Colonel—and three Adjutants, generally a Major and two Captains.

The Engineer Inspections.

There are four Engineer Inspections: the first two with head-quarters at Berlin, the third with head-quarters at Mainz, and the fourth with head-quarters at Cologne.

Each Inspection is under a Major-General or a Colonel, assisted by two Adjutants—a Captain and a First Lieutenant.

Up till August last, an Engineer Inspection comprised a "Pioneer Inspection" and two "Fortress Inspections." The former comprised the Pioneer Battalions stationed in the district of the Inspection, and the latter the fortresses that happened to be in the same *rayon*. There were consequently four Pioneer Inspections and eight Fortress Inspections in all. The head-quarters of the Pioneer Inspections were at Berlin, Magdeburg, Strasburg, and Coblentz.

The first Engineer Inspection comprised the 1st Pioneer Inspection and the 1st and 2nd Fortress Inspections. The Pioneer Inspection comprised the Guard Pioneer Battalion and the 1st and 2nd Pioneer Battalions. The first Fortress Inspection comprised the fortresses of Königsberg, Memel, Pillau, and Feste Boyen (near Lötzen), with head-quarters at Königsberg; and the 2nd Fortress Inspection comprised the fortresses of Danzig, Thorn, Colberg, Swinemünde, Stralsund, and Marienburg, with head-quarters at Danzig.

The second Inspection comprised the 2nd Pioneer Inspection and the 3rd and 4th Fortress Inspections. The Pioneer Inspection comprised the 3rd,

[1] *General der Infanterie* or *General der Cavallerie* corresponds to our rank of full General.

4th, 5th, and 6th Pioneer Battalions. The 3rd Fortress Inspection comprised the fortresses of Posen, Glogau, Neisse, and Glatz, with head-quarters at Posen; and the 4th Fortress Inspection the fortresses of Cüstrin, Spandau, Magdeburg, and Torgau, with head-quarters at Berlin.

The third Inspection comprised the 3rd Pioneer Inspection and the 5th and 6th Fortress Inspections. The Pioneer Inspection comprised the 11th, 14th, 15th, and 16th Pioneer Battalions. The 5th Fortress Inspection comprised the fortresses of Mainz, Ulm, and Rastatt, with head-quarters at Mainz; and the 6th Fortress Inspection comprised the fortresses of Metz, Thionville, Bitsch, Strasburg, and Neu Brisach, with head-quarters at Metz.

The fourth Inspection comprised the 4th Pioneer Inspection and the 7th and 8th Fortress Inspections. The Pioneer Inspection comprised the 7th, 8th, 9th, and 10th Pioneer Battalions. The 7th Fortress Inspection comprised the fortresses of Wesel, Düsseldorf, Coblentz, Cologne, and Saarlouis, with head-quarters at Cologne; and the 8th Fortress Inspection comprised the Mecklenburg Coast Defences, Sonderburg-Düppel, Friedrichsort, Kiel, Cuxhaven, Geestemünde, Wilhelmshaven, and the mouth of the Ems, with head-quarters at Altona.

A Cabinet Order of the 3rd of August, 1885, has however considerably altered this arrangement, the result being a more distinct line being drawn between Engineer Officers employed on fortifications, or Fortress Engineers, and Engineer Officers employed with the Pioneer Battalions, or Field Engineers.

The Chief of the Engineers and Pioneers and Inspector-General of Fortifications is still the immediate head of both branches as before; but, whereas there were formerly four Pioneer Inspections, which, with the Fortress Inspections, were under the four Engineer Inspections, there are now *two* Pioneer Inspections only, comprising the eastern and western halves of the Empire, separate and distinct from the Engineer Inspections, which consequently comprise Fortress Inspections only.

The four Engineer Inspections now comprise two additional Fortress Inspections, viz., the 9th Fortress Inspection, with head-quarters at Thorn, now added to the 1st Engineer Inspection, and the 10th Fortress Inspection, with head-quarters at Strasburg, to the 4th Engineer Inspection.

The two Pioneer Inspections are as follows:—

To the first belong the Pioneer Battalion of the Guard, the 1st (East Prussian), the 2nd (Pomeranian), the 3rd (Brandenburg), the 4th (Magdeburg), the 5th (Lower Silesian), the 6th (Silesian), and the 9th (Schleswig-Holstein) Pioneer Battalions.

To the second belong the 7th (Westphalian), the 8th (Rhine), the 10th (Hanoverian), the 11th (Hessian), the 14th (Baden), and the 15th and 16th Battalions (Alsace-Lorraine).

The Pioneer Inspectors are now immediately under the Inspector-General of Engineers.

Further instructions are to be issued on the subject, as well as the appointment of the necessary staffs, &c.

The Fortress Inspectors (Colonels or Lieutenant-Colonels) have charge of all military engineering work connected with fortifications, together with the Government *personnel* employed on such work in their respective districts, and they have their offices in one of the most important fortresses in the same.

When, however, very large works have to be undertaken, such as refortifying, remodelling, or laying out works on a large scale, a temporary special Fortress Inspection would be created for the purpose; for instance, one of these existed at Strasburg from 1872 to 1882.

The Engineer Committee.

(*Ingenieur-Comité.*)

The Engineer Committee is chiefly engaged in making and revising projects for fortifications, and dealing with questions of Engineer equipment and *matériel* generally, and the service regulations, &c., of the Engineer Corps and Pioneer Battalions. It also deals with all technical matters of a military engineering character, and undertakes the study and examination of Engineer matters generally in foreign countries. The Committee is under a Major-General, and comprises 15 Engineer Officers and one Artillery Officer.

The Board of Examination for Officers.

(*Prüfungs-Commission des Ingenieur-Corps.*)

The Board of Examination conducts written examinations for promotion of Captains and First Lieutenants in the Corps. Most of the Officers serving on the Board are chosen from those stationed at or near Berlin. The Board is under a Colonel and comprises 13 Officers of various ranks.

The Inspection of Military Telegraphs.

(*Inspection der Militär-Telegraphie.*)

The main duties of this Inspection consist in watching improvements in telegraph matters, and the purchase and care of the telegraph stores required for the Field and Etappen Telegraph Detachments on mobilization. It has to see to the *personnel* required for these as well, and, in fact, has to ensure generally that everything required in these respects for mobilization would be forthcoming.

A Major and four First Lieutenants of the Pioneers are attached to the Inspection to act as Officers of a Field Detachment, and one of these is annually actually formed on very nearly a war footing and does practical work at the Great Autumn Manœuvres. The attached Officers are constantly changed. The Inspection comprises Engineer Officers of various ranks.

The Engineer Department at the War Ministry.

The 5th section of the Imperial War Ministry at Berlin is known as the *Abtheilung für die Ingenieur-Angelegenheiten*, or Section for Engineer matters. It is under a Colonel as a rule, and has belonging to it 4 Captains. Three of these are *à la suite* of the Corps, or shown as supernumeraries.

The duties consist chiefly in questions of fortification, and mainly so far as the War Minister has to deal with such matters. These are more of a financial than technical nature in the case of the War Minister, his functions being more of an administrative, whereas those of the Inspector-General are more of a professional, nature.

Engineer Officers on the Staff of the Army in the Field.

On mobilization, the Inspector-General of Engineers and Fortifications, with a Field Officer and Captain as Adjutants, would form part of the Commander-in-Chief's Head Quarters (*Grosses Hauptquartier*), forming a "General Inspection of Engineers" with the Army in the Field. It would be given 2 non-commissioned officers as clerks, 11 train soldiers, and a baggage wagon. The Inspector's Chief of the Staff would remain at Berlin.

The Inspector-General would have general direction of all Pioneer and Engineer matters with the Army in the Field, and would receive his instructions in this respect from the Chief of the General Staff, to whom he would

also act as an assistant in all matters connected with his branch of the Service.

Similarly there would be on the staff of every mobilized Army a Field Officer —a Colonel, or Lieutenant-Colonel, as a rule—as commanding the Engineers and Pioneers of that Army, assisted by a Captain or Lieutenant as Adjutant. He would have 2 non-commissioned officers as clerks, 11 train soldiers, 20 horses, and a baggage wagon. His duties would chiefly consist in a general superintendence of all technical matters connected with the Engineers and Pioneers of the Army, and he would be held responsible that the necessary *matériel*, more especially that of the Bridge Trains, was in serviceable order. Should any engineering work on a large scale have to be done, necessitating the employment of the Pioneers of several Army Corps together, he would act as Superintending Engineer. He would take his instructions from the Chief of the Staff of the Army, to whom he would act as an assistant or adviser in all matters connected with his branch of the service.

On the Staff of a mobilized Army Corps there would be a Field Officer commanding the Engineers and Pioneers of that Army Corps in all matters technical. His position as regards the General Commanding the Army Corps and his Chief of the Staff would be much the same, though on a smaller scale, as that described in the case of an Army. He would generally superintend any work undertaken by more than one Field Pioneer Company. As a rule, he would be the ex-Major commanding the Pioneer Battalion of the Army Corps broken up on mobilization, and would be accompanied by his Adjutant, one non-commissioned officer as clerk, 4 train soldiers, 9 horses, and a baggage wagon.

It should be remembered that the Pioneers in the field are under the immediate military orders of the Generals commanding the units (Divisions, Brigades, &c.) to which they belong, and consequently the functions of the Officers above alluded to have nothing whatever to do with discipline and matters purely military.

The total number of Engineer Officers given in the Prussian Army List for 1885[1] is 1 Lieut.-General and 4 Major-Generals, besides 2 Generals ("Generals of Infantry") *à la suite* or supernumerary, 9 Colonels, 12 Lieut.-Colonels, and 51 Majors besides 3 *à la suite*. The Major-Generals and Field Officers are shown as the *Stab*. The Inspections number 128 Captains, 115 First Lieutenants, and 255 Second Lieutenants, besides 20 Captains and 6 First Lieutenants *à la suite*.

This gives a total of 575 doing-duty Officers and a supernumerary list of 31.

The supernumerary Generals are unemployed, the supernumerary Field and other Officers are employed chiefly in military training and educational establishments.

Of the 575 doing-duty Officers, 258 Majors, Captains, and Subalterns are shown as doing duty with the Pioneers, but many of these are often absent on command from their Battalions, generally going through some course of instruction.

There are 73 Reserve Officers shown as belonging to the 15 Prussian Pioneer Battalions; of these, 4 are Captains and the remainder Subalterns. They are shown on the strength of the Landwehr or Reserve Landwehr Regiments as well. They vary from 1, belonging to the 16th Pioneer Battalion (attached to the XVth or Alsace-Lorraine Army Corps), to 17 belonging to the 7th Pioneer Battalion, belonging to the VIIth or Westphalian Army Corps.

Thus the total number of Engineer Officers in the Prussian Service is some 679 of all ranks.

[1] For recent alterations in the Corps of Engineer Officers, see page 1166.

None of the 317 Officers not shown as doing duty with the Pioneers are employed in what we should call civil duties—public works or otherwise. The employment is all *military*, the construction, care, and maintenance of all military buildings, not being fortifications, being under another department, with which the Engineers have nothing to do.

51 of the Second Lieutenants, chiefly those not quite the most junior, are shown as studying at the Artillery and Engineer School, but one Officer only, a Lieutenant, is shown as studying at the War Academy or Staff College.

Officers employed as Instructors at the War Academy and Artillery and Engineer Schools are not shown *à la suite* or supernumerary, whereas those employed at the various War Schools and Cadet establishments are.

Officers belonging to Pioneer Battalions are exclusively employed in training their men, but take their share of certain garrison duties as well. There is no such thing as any kind of instructional Staff, such as we have, and everything has to be done by the Regimental Officers and non-commissioned officers. This entails very hard work on them, but at the same time has the great advantage of ensuring the most perfect knowledge of the details of their profession, such as can only be arrived at by constant habit and practice.

This is how matters stood up till August last (1885).

By the Cabinet Order that was issued on the 3rd of the month considerable alterations have been introduced, the general result being to make the Engineers and Pioneers a more distinct service, and the Pioneer Battalions units of a more regimental and independent character.

The Officers of the Corps of Engineers are now to be divided into four distinct lists (*Offizier-Corps*) of the four Engineer Inspections and 15 lists for the 15 Pioneer Battalions.

The former will be known by the Roman numbers I to IV, and the latter by the ordinary numbers 1 to 15.

Field Officers, Captains, and Subalterns not borne on the establishment of these will be shown as *à la suite* of (or seconded) an Engineer Inspection or a Pioneer Battalion.

Thus the Corps of Engineer Officers may be said to have been entirely broken up by this arrangement and the different services made distinct.

Further instructions on the subject are to be issued.

It has always been maintained in the German Service that the duties of Engineer Officers were too many and multifarious. The Germans have always maintained that a "Jack-of-all-trades" is a "master of none." In no country are military matters so thoughtfully studied and worked out. In no country does the Army attract so much serious attention. The Germans are, however, at the same time very conservative, and change for the sake of change meets with no favour. We may therefore feel assured that the complete change that has recently been resolved on was not hastily arrived at, and that it was made after due deliberation and final conviction that it was absolutely necessary.

But then we must remember the Germans know *what their Army is for*

Würtemberg.

The Würtemberg Army, which furnishes the XIIIth Army Corps of the German Army, has a Corps of 20 Officers, comprising 1 Colonel, 2 Majors, 4 Captains, 4 First Lieutenants, and 9 Second Lieutenants. 4 Captains, 4 First Lieutenants, and 9 Second Lieutenants belong to the 13th Pioneer Battalion, but 3 of the latter are studying at the Berlin Artillery and Engineer School, and 1 at the War Academy or Staff College. The Colonel is employed at the War Ministry at Stuttgart, and 1 Major on fortification work at Ulm. One Major and 3 of the Captains are Prussian Officers borne *à la suite* or on the supernumerary list of the Prussian *Ingenieur-Corps*.

The fortress of Ulm, which is in the 5th Fortress Inspection, belonging to the 3rd Engineer Inspection of the German Empire, is on both banks of the Danube, the part on the left bank being in Würtemberg. There are 10 Engineer Officers employed on fortifications in the fortress altogether, but only one is a Würtemberg Officer, 5 being Prussian and 3 Bavarian Officers.

There are 8 Reserve Engineer Officers, viz., 3 First and 5 Second Lieutenants. They are shown as belonging to the 13th Pioneer Battalion, and to Landwehr or Reserve Landwehr Regiments and Battalions as well.

Thus the total number of Engineer Officers in the Würtemberg service is 28 of all ranks.

Saxony.

The Saxon Army, which furnishes the XIIth Army Corps to the German Army, has a corps of 22 Engineer Officers, comprising 1 Colonel, 1 Lieut.-Colonel, 3 Majors, 6 Captains, 4 First Lieutenants, and 7 Second Lieutenants. Of these, the Colonels, 2 Majors, and 2 Captains are shown as belonging to the Engineer Section of the General Staff or War Ministry in Dresden; 1 Major, 4 Captains, and the Lieutenants are shown as doing duty with the 12th or Saxon Pioneer Battalion; 1 Captain is shown as belonging to the Prussian Great General Staff at Berlin; and 1 of the Captains of the Saxon War Ministry is shown on command at Posen, employed on the fortifications there.[1]

There are 3 First and 18 Second Lieutenants shown as Reserve Officers belonging to the 12th Pioneer Battalion. They are also shown as belonging to Landwehr or Reserve Landwehr Battalions and Regiments.

The small fortress of Königstein, now used as a prison, is without an Engineer Officer.

Thus the total number of Engineer Officers in the Saxon Service is some 43 of all ranks.

Bavaria.

Bavaria has an *Ingenieur-Corps* and 2 Battalions of Pioneers, and a Railway Company. Both Pioneers and Railway Company are officered from the former.

The Corps of Engineer Officers consists of 2 Colonels, 6 Lieut.-Colonels, 8 Majors, 26 Captains, 29 First Lieutenants, and 43 Second Lieutenants, or 114, all told. Of these, 1 Lieut.-Colonel, 1 Major, 10 Captains, 8 First Lieutenants, and 33 Second Lieutenants are shown as belonging to the 1st and 2nd Pioneer Battalions, but the junior Second Lieutenants—about one half—are shown as studying at the Artillery and Engineer School at Munich. The Officers of the Railway Company comprise 1 Captain, 2 First Lieutenants, and 3 Second Lieutenants.

The number of Officers actually doing duty with the Pioneers and Railway Company are 43, deducting those at the Artillery and Engineer School. The remainder, 42, are employed in various ways on fortifications.

Bavaria has its own Inspection of the Engineers and Fortresses at Munich (*Inspektion des Ingenieur-Corps und Festungen*) under a Lieut.-General (not shown on the list of the Corps), assisted by 2 Adjutants. It is divided into 3 sections, under a Major-General (not shown on the list of the Corps), a Colonel, and a Lieut.-Colonel, employing 2 Captains and 3 First Lieutenants —all Engineer Officers.

The Pioneer Battalions, the Railway Company, and the Engineer Directions are, both in technical and personal matters, under this Inspection.

There are the two Fortress Engineer Directions of Ingolstadt and

[1] Army List for 1885.

Germersheim and the 1st and 2nd Engineer Directions at Munich and Würzburg respectively.

The Fortress of Ulm, partly in Bavaria and partly in Würtemberg, is an Imperial fortress, and the Bavarian Engineer Officers employed in it are borne *à la suite* or as supernumeraries.

The Directions give employment altogether to some 33 Officers of all ranks.

The number of Officers borne *à la suite* is 2 Lieut.-Colonels, 2 Majors, 3 Captains, and 6 First and Second Lieutenants. These are shown as employed at the War Ministry at Berlin, at the Artillery and Engineer School at Munich and other training establishments, and on the fortifications of Ulm.

There are 22 First Lieutenants and 36 Second Lieutenants, shown as Reserve and Landwehr Officers, and borne on the *Beurlaubtenstand* or furloughed list of the Corps of Engineers. These are all shown as belonging to the 1st or 2nd Pioneer Battalion or Railway Company.[1]

Thus the total number of Engineer Officers in the Bavarian Service is some 187 of all ranks.

There is a General at the head of the Bavarian Engineer Corps styled a "Chef des Ingenieur-Corps." His office is at Munich. His functions are much the same as those of the Prussian Inspector-General, though of course on a much smaller scale, but he has certain additional duties, inasmuch as the Bavarian Railway Company belongs to the Engineers, and certain other building and topographical work is also undertaken by Engineer Officers in the Bavarian service.

The Inspector has a staff of 2 Adjutants—a Captain and a Lieutenant—and his office is divided into three sections, each under a Field Officer, generally a Lieut.-Colonel. The first section is devoted to questions concerning the Pioneer Battalions and Railway Company and their training, the second to fortifications, and the third to military buildings.

The Saxon Pioneer Battalion is under the Officer commanding the Saxon Brigade of Artillery, and the Würtemberg Battalion is practically treated as a Prussian Battalion.

Summary.

The total number of Engineer Officers in the German Service actually doing duty with the Engineer arm is then—

In Prussia, &c.	575
„ Würtemberg	20
„ Saxony	22
„ Bavaria	114
Total	731,

exclusive of Officers *à la suite*, in the Reserve or Landwehr, or in the Railway Regiment.

Now, according to the establishment fixed by the Law of the 6th May, 1880, for the seven years from the 1st April, 1881, to the 31st March, 1888,[2] the *Ingenieur-Corps*, exclusive of supernumeraries, is given as—

[1] Army List, 1884.

[2] In Germany the annual contingent of recruits is *not* annually fixed by Parliament, but *the peace strength is voted for 7 years*. This is an advantage on which the military authorities lay great stress. In the first place, the number of men that may be called out may vary practically to any extent, and this enables men, such as train-soldiers, &c., and other non-combatants whose service with the colours need be very short, to be sent to their homes and replaced by recruits whenever the

94 Officers of the *Stab* (General and Field Officers),
166 Captains,
156 First Lieutenants,
359 Second Lieutenants,

Total 775,

so that there is a *deficit* of some 44 Officers, chiefly in the subaltern ranks.

It must not, however, be inferred from this that the service is an unpopular one. There is a large deficit in the total number of Officers required for the German Army. Some regiments have more candidates for commissions than they require, and the reverse is the case with others, depending chiefly on the popularity of the arm and regiment, and the place or district the latter is permanently quartered in. It should also be remembered that the conditions to be fulfilled by candidates for commissions *are never relaxed*, and the qualifications necessary for the honour of wearing the King's uniform are most jealously guarded both by the highest authorities and the Officers themselves.

The Appointment of Engineer Officers in Germany.

Engineer Officers are appointed in the German Service on the same principles as in the Infantry, Cavalry, and Artillery.

They first join as privates, enlisting, as three-year volunteers, as candidates for a commission, but before being accepted as such they must produce certain certificates of education; that is to say, they must have either passed the *Porte-épée-Fähnrich's* (or Ensign's) examination, or the *Abiturienten-Examen*, or examination of a Government school qualifying for admission to a university. They must, moreover, satisfy certain social requirements as being eventually fit for the rank and position of Officer.

Candidates serving as above are generally known throughout the German army as *Avantageurs*, but this is little more than a nickname, having no official meaning.

The only exception to the rule of first joining as a private applies to certain specially qualified cadets from the *Haupt-Cadetten-Anstalt*, or Chief Cadet Establishment, at Berlin.[1]

After serving as private, and in the various non-commissioned ranks up to that of *Porte-épée-Fähnrich*—one rank below Vice-Company-Sergeant-Major

military authorities please, without any interference on the part of Parliament, the whole male population within certain limits being thus at their disposal.

[1] The Prussian *Cadetten-Corps* comprises a chief establishment (*Haupt-Cadetten-Anstalt*) at Gross Lichterfelde, near Berlin, and secondary establishments (*Cadetten-Häuser*) at Potsdam, Culm, Wahlstadt, Bensberg, Plön, Oranienstein, and Dresden, and gives employment to some 150 Officers of various ranks, as Instructors, &c., exclusive of Surgeons, Chaplains, &c. Cadets are taken from the age of 11 to 15. Bavaria has its own *Cadetten-Corps* at Munich. The education in the secondary establishments is general and not military, but in the higher establishment at Berlin military subjects are taught in the higher classes. There are four of the latter, viz., the second, first, superior first, and *selecta*. Cadets who have passed the first two may, if they pass the *Porte-épée-Fähnrich's* examination, join a regiment with the probationary rank of *Porte-épée-Fähnrich*, and, after six months' service, get confirmed in it, but the *curriculum* is otherwise the same for them as for the *Avantageurs*. Cadets coming from the superior first class can join a regiment as *Porte-épée-Fähnrich*, and, after six months' service, get a commission, subject to the *Wahl*, or Officer's vote. Cadets from the superior first and *selecta* classes are dispensed with the year's study at a war-school, and those from the *selecta* are dispensed with the *Wahl*.

(*Vice-Feldwebel*)—for a period varying from six months to a year, the *Porte-épée-Fähnrich* goes to one of the war-schools (*Kriegsschulen*)[1] for a 10 months' course of study. If he passes this successfully, with its required tests and examinations, he rejoins his battalion as a *Porte-épée-Fähnrich*, and after fulfilling certain other minor conditions—amongst others the question of the *Wahl*, or his acceptation by the Officers of the Battalion as socially and otherwise fit for the epaulette—he is finally gazetted as Second Lieutenant, and serves as such, in excess of the establishment, for at the very least a year, when he goes to the School of Artillery and Engineers (*Artillerie- und Ingenieur-Schule*) at Charlottenburg, near Berlin, or, if a Bavarian, to a similar establishment at Munich. The course of study at either of these lasts 2 years, at the termination of which, if the necessary examination is successfully passed, the candidate rejoins his Battalion and is gazetted to the *Ingenieur-Corps* and taken on the establishment.

Up to this he has only drawn Infantry pay. He now draws Engineer pay, which, in the case of a Second Lieutenant, is some 24/– more *per mensem*.

If a *Porte-épée-Fähnrich* fails in any of these tests, he is always liable to serve his three years out as a *Porte-épée-Fähnrich*.

Promotion.

Promotion in the *Ingenieur-Corps* is strictly according to seniority, and only in the case of promotion from Captain to Major is a written qualifying examination necessary.

The only possible way in which an Officer could get more rapid promotion would be by appointment to the General Staff, when he would return to the Engineer Corps with the rank he had attained in the General Staff Corps, but this is a very rare occurrence.

Promotion in the Engineers is very slow, though not quite so slow as in the Infantry or Cavalry. In the former there are some 25 Captains who are over 12 years' service in that rank, and 39 who have more than 24 years' service. The senior First Lieutenants have now more than 9 years' service in that rank, and 16 years' service altogether. The senior Second Lieutenants have over 10 years' service.

The pay of Engineer Officers is higher in many cases than that of Infantry Officers, the comparison *per annum* in English money, including all allowances,[2] with the exception of forage and stabling allowances,[3] being as follows :—

[1] There are 8 of these, viz., at Potsdam, Erfurth, Neisse, Eagers, Cassel, Hanover, Anclam, and Metz, taking each about 100 students, besides a Bavarian one at Munich.

[2] The mean lodging allowance is included, as it varies in different garrisons.

[3] Captains in the Pioneers are, as in the Infantry, mounted. The Captain receives forage, &c., allowances for one horse, the Major for two, and the Colonel for three horses. A Battalion Adjutant receives forage, &c., allowances for one horse, a Regimental Adjutant for two horses, and a Brigade Adjutant for three horses. (A Regiment, it should be remembered, means 3 Battalions, and a Brigade 6 or 7 Battalions.) In the field all Pioneer Officers with the Field Companies would be mounted.

	Infantry.			*Engineers.*		
	£	*s.*	*d.*	£	*s.*	*d.*
Colonel	517	4	0	517	4	0
Lieut.-Colonel.—If holding the position of a Colonel, *i.e.*, commanding a Regiment or its equivalent, the pay of a Colonel; if holding the position of Major, the pay of a Major.						
Major	349	4	0	364	4	0
Captain { 1st Class	246	12	0	261	12	0
Captain { 2nd Class....	174	12	0	192	12	0
First Lieutenant	90	12	0	99	12	0
Second Lieutenant	81	12	0	96	0	0

In the non-commissioned ranks of the Pioneers the comparison would be:—

	Infantry.			*Engineers.*		
	£	*s.*	*d.*	£	*s.*	*d.*
Sergeant-Major	44	19	4	45	17	2
Vice-Sergeant-Major	32	10	2	33	8	2
Porte-épée-Fähnrich	21	14	2	21	14	2
Sergeant	25	12	1	26	10	1
Corporal	19	6	1	20	4	1
Lance-Corporal	9	4	6	9	4	6
Private	8	6	6	8	6	6

There is no such thing as extra pay in the shape of Engineer pay or working pay in the German Service as with us, except in the case of the Railway Regiment, when Officers and men of this corps are engaged on work for State or private railways.

Duties of Engineer Officers in Peace.

Officers doing duty with Pioneer Battalions are exclusively employed in training themselves and their men in such duties as they would be called upon to perform in war. They perform, besides, certain strictly military garrison duties, just as Officers of Infantry, Cavalry, or Artillery, but they are not called upon to do any kind of what we call *departmental* work in connection with works or buildings.

Officers employed in district work are exclusively employed on the construction and maintenance of fortifications, including powder magazines and all casemates and bomb-proof buildings.

As regards other military buildings, Engineer Officers are employed in the construction only of such works as military laboratories and powder magazines. The construction and maintenance of barracks and all other kinds of military buildings are entrusted to civilian supervision and labour, and the estimates and expenses incurred for such purposes are in the hands of a special department known as the *Garnison-Verwaltungen*, or Garrison Administrations, which belong to the *Intendanturen* of the Army Corps to which the garrison in question belongs.

In every fortified place, or place being fortified (*Königliche Fortification*), there is a *Festungs-Bau-Direction* or Engineer Office. In the latter case the "Direction" would be a temporary and special one. There is one of this kind now at Kiel, formed in 1882. The "Direction" in a fortified place is under a Field Officer or a Captain, according to the size and importance of the works, styled *Platz-Ingenieur*, and, in the case of a place being fortified, a *Festungs-Bau-Director* or Director of Works. He has under him both the

Engineer Officers and civilians employed in the office and on the works, and has charge of plans, designs, estimates, and execution. The number of Officers and employés vary according to the scale of the work.[1]

For general Engineer duties the place is sub-divided into divisions called *Bau-Posten*, each under an Officer (*Posten-Offizier*); the number of these, as well as the distribution of the *personnel* under them, is left to the *Platz-Ingenieur* or *Bau-Director* as the case may be.

When new works are being carried out, they may be entirely or partially handed over to special *Posten-Offiziere*, and these might then have charge of one or more *Posten* each. They would then be styled *Ober-Posten-Offiziere*.

Part II.—THE GERMAN PIONEERS.

Peace Organization.

The German Pioneers are organized in peace in 19 battalions. Of these, 15 are Prussian or belong to contingents directly under the War Ministry at Berlin, viz., the Pioneer Battalion of the Guard, Battalions Nos. 1 to 11, and Battalions Nos. 14, 15, and 16; No. 12 is the Saxon Battalion, No. 13 is the Würtemberg Battalion, and two are Bavarian, viz., the 1st and 2nd Bavarian Battalions.

Each Battalion bears the number of the Army Corps to which it belongs, and is distinguished by the name of the province in which it is recruited as well. Thus, the 8th Pioneer Battalion belongs to the VIIIth Army Corps, and is known as the 8th Rhine Pioneer Battalion (*Rheinisches Pionier-Bataillon, No.* 8). The Guard Battalion and Battalions Nos. 15 and 16 form exceptions to this rule. The two latter belong for the time to the XVth Army Corps, at present garrisoning Alsace-Lorraine.

A Battalion on a peace footing consists of a Staff and 4 Companies, numbered 1 to 4. The first three in every Battalion are trained in pontooning, field-works, and such sapping and mining as is required in the field only, and the 4th Company, known as a Mining Company (*Mineur-Compagnie*), is trained in sapping, mining, and siege works generally. The first three Companies in a Battalion may therefore be looked on as Field Engineers, or Pioneers and Pontoneers, and the 4th Company as Siege Engineers, or Sappers and Miners. Formerly, that is to say, before 1873, the 1st Company in every Battalion was a Pontoneer Company, but now the first three Companies are trained alike in pontooning.

The Bavarian Battalions have 5 Companies each, 3 being Field and 2 Siege Companies.

The average peace strength of a Pioneer Company is 1 Captain, 1 First Lieutenant, 2 Second Lieutenants, 16 or 17 non-commissioned officers, 3 buglers, 9 lance-corporals and re-engaged men, and 93 privates including hospital attendants, giving a total of 4 Officers and 121 or 122 non-commissioned officers and men.

The Battalion Staff consists of the Officer in command, a Major (rarely a Lieut.-Colonel), 1 Lieutenant as Adjutant, 1 Surgeon, 1 Assistant Surgeon, and 1 Paymaster. There are, besides, belonging to the Battalion Staff, a section of 12 tradesmen (tailors, shoemakers, &c.).

[1] The *employés* who act as assistants to Engineer Officers employed as above are of two kinds, viz., *Fortifications-Secretäre* or *Festungs-Inspektions-Secretäre* and *Wallmeister*. The former would correspond to our clerks, surveyors, &c., and the latter to our clerks of works or foremen of works, or the French *Gardes du Génie*. *Wallmeister* are all selected ex-non-commissioned officers of pioneers, of at least 9 years' service, 5 of which must have been passed in the rank of non-commissioned officer.

In peace time the buglers of the Battalion are formed, with a few musicians detached from the Companies, into a small brass Battalion band. This, of course, is broken up on mobilisation. Every Battalion has also a colour, but it is not taken into the field.

A Prussian Battalion is therefore, on a peace footing, some 21 Officers and 491 to 495 non-commissioned officers and men strong. The Saxon Battalion is precisely like a Prussian one. The Würtemberg Battalion is very slightly weaker. In a Bavarian Battalion the Companies have each 3 lance-corporals more and 5 privates less than in a Prussian Battalion. The Bavarian Field and Siege Companies are of similar strength.

There is one *Porte-épée-Fähnrich* in every Company, Battery, or Squadron in the other arms, but in the Pioneers more than one per Company as a general rule, the proportion between Officers in the Engineers to men in the Pioneers being greater than the proportion of Officers to men in the other arms.

(For Clothing, Arms, and Accoutrements, see War Organization.)

Peace Quarters and Recruiting.

The Pioneers of the German Army are, with the exception of the Guard Pioneer Battalion, territorially recruited in the district of the Army Corps to which they belong, and all, with the exception of the 3rd, 7th, and 10th, are stationed in these districts. These three, the Brandenburg (3rd), Westphalian (7th), and Hanoverian (10th) Battalions are, however, not very far from them, being quartered at Torgau, Deutz (near Cologne), and Minden respectively. All the Battalions, with the exception of the Guard Battalion, Battalions Nos. 9 and 12, and the Field Companies of the 2nd Bavarian Battalion, are quartered in fortresses. The fortified places in Germany where there are no Pioneers are Thionville (Diedenhofen), Saarlouis, Bitsche, Neu-Brisach, Rastatt, Wesel, Spandau, Königstein, Cüstrin, Glatz, Posen, Thorn, Königsberg, Pillau, Lötzen, Memel, Sonderburg, Swinemünde, Colberg, and the coast defences of the North Sea and Baltic.

The Prussian Pioneer Battalions are permanently quartered at the following places :—

The	Guard Pioneer Battalion	....	at Berlin.
„	1st (East Prussian) „	....	„ Danzig.
„	2nd (Pomeranian) „	....	„ Stettin.
„	3rd (Brandenburg) „	....	„ Torgau.
„	4th (Magdeburg) „	....	„ Magdeburg.
„	5th (Lower Silesian) „	....	„ Glogau.
„	6th (Silesian) „	....	„ Neisse.
„	7th (Westphalian) „	....	„ Deutz (near Cologne).
„	8th (Rhenish) „	....	„ Coblentz.
„	9th (Schleswig-Holstein) „	....	„ Rendsburg.
„	10th (Hanoverian) „	....	„ Minden.
„	11th (Hessian) „	....	„ Castel (near Mayence).
„	14th (Baden) „	....	„ Kehl (near Strasburg).

The 15th and 16th Battalions have as yet no territorial titles; they belong to the XVth Army Corps, and are quartered at Strasburg and Metz respectively.[1]

The	12th (Saxon) Pioneer Battalion		is quartered at Dresden.
„	13th (Würtemberg) „	„	Ulm.
	1st (Bavarian) „	„	Ingoldstadt (with 1 Company at Neu-Ulm).

[1] The Head Quarters of this Army Corps, now at Metz, are shortly to be moved to Strasburg.

The 2nd (Bavarian) Pioneer Battalion is quartered at Speyer (with 2 Fortress Companies at Germersheim).

Pioneers are recruited just as the other arms of the German Army.

The men are obtained—

(*a*) By the annual contingents of recruits raised on universal compulsory service, and these form of course the vast majority.

(*b*) By volunteers.

There are two kinds of the latter; they may enlist for 1 or 3 years;[1] the first are known as One-year Volunteers (*Einjährig-Freiwillige*).

One-year Volunteers are only those who can produce certificates of a certain standard of education, and who have the means of clothing and maintaining themselves. They receive no pay, rations, or clothing. If they pass a certain examination satisfactorily, and are otherwise qualified at the end of their one year's service, they eventually become Reserve Officers, and would serve as such in case of war. Another inducement held out to One-year Volunteers is that they can get through their service at an earlier age than the conscript. One-year Volunteers cannot apply later than the 1st February of the year in which they complete their 20th year.

Any physically fit young man, and otherwise desirable as a Pioneer Soldier, can enlist for 3 years if he presents himself before the 31st of March of the year in which he completes his 20th year. Candidates for commissions, generally known as *Avantageurs*, enlist as Three-year Volunteers in the first instance.

Both classes of Volunteers may be taken when they have completed their 17th year.

Those who wish to re-engage after completing their 3 years' service can only do so with the consent of their Commanding Officer, and only then if they are likely to make good non-commissioned officers. Re-engaged men are known as *Capitulanten*. The re-engagement may be for one or more years, and may then be renewed. A re-engaged man who has completed 12 years' service has a claim on the State for employment in various capacities.

The peace strength of the German Army is a fixed one, and is exclusive of One-year Volunteers. The contingent of recruits is annually fixed by the Emperor or military authorities, being apportioned among the States of the Empire by the Federal Council according to their respective populations.

The average number of recruits annually required for a Prussian or similar Pioneer Battalion is about 160. The Bavarian Battalions, being five Companies strong, require more, or some 200.

Thus the average annual contingent of recruits required for the Pioneers of the German Army would be—

For the	15 Prussian, &c., Battalions	2,400	men
„	1 Würtemberg Battalion	160	„
„	1 Saxon Battalion	160	„
„	2 Bavarian Battalions	400	„
	Total,	3,120	in all.

The duration of service for the Pioneers is precisely the same as for the Infantry, that is to say, 3 years with the Colours, 4 in the Reserve, 5 in the Landwehr, and then till completion of the 42nd year in the Landsturm.

The actual liability to military service of all Germans begins on completing the 17th year, and ends on completing the 42nd year.

In ordinary times liability to service does not come into force until the 1st January of the year in which the man completes his 20th year.

[1] In the Cavalry and Navy, 4 years.

Pioneers are selected from the annual contingents of recruits as being men of strong physique and belonging to certain trades, such as bricklayers, masons, carpenters, miners, stone-cutters, smiths, boatmen, &c., and a few from such trades as draughtsmen, fitters, &c.

Each Battalion, with the exception of the Pioneer Battalion of the Guard, is recruited in the district of the Army Corps to which it belongs.

The Pioneer Battalion of the Guard is recruited, just as the other troops of the Guard Corps, from picked recruits from all parts of the Empire except Bavaria, Saxony, and Würtemberg.

Discipline.

Though every Pioneer Battalion throughout the Empire is under a Pioneer Inspector in all technical matters, who is directly responsible for its proper technical training, through the Engineer Inspector, to the Inspector-General, still this Officer has, as has already been stated, nothing whatever to do with discipline.

In peace the Pioneer Battalion, just as the Rifle and Train Battalion of an Army Corps, is in this respect directly under the General Commanding the Army Corps, and belongs to no Brigade or Division, that is to say, it is, in the German military language, *selbständig* or independent. In war, Pioneer Companies would always belong to a Division, or even sometimes a Brigade, and would consequently in all questions of discipline be under the General Officer Commanding the Division or Brigade in question. In technical matters the Pioneers of an Army Corps would then be under the Officer Commanding the Engineers and Pioneers on the Staff of the Army Corps, who, as a rule, would be the Officer Commanding the Pioneer Battalion of the Army Corps previous to mobilization.

Training.

Field and Siege Works.

It is laid down in the German Regulations that "Pioneers are especially intended for the execution of such works in the field as are necessary, in the presence of the enemy and in battle, to assist our own troops in attack or defence, and further at other times provide for such requirements of an army as huts, roads, water supply, &c."

The training of the German Pioneers is exclusively military, and *the whole time of their service in peace is taken up with training for the requirements of war.* They are further trained in all Infantry drill and duties, and it is distinctly laid down that they can be used as Infantry in battle.

The "*Armee-Verordnungsblatt*," No. 3, of the 18th February, 1885, gives the Imperial Order of the 29th January, 1885, on the "Employment of Pioneers at Autumn Manœuvres," and adds that these Instructions are to be included in the existing Regulations on the training of troops in field duties and the Great Manœuvres. The following is the text of the Order in question :—

"Pioneers are, by reason of their training and armament, just as able to take part in actual fighting as any other troops. But their special and more principal calling is the execution of technical work in the presence of the enemy—work which may be of immense importance to the other arms, and may turn the scale in battle.

"It is often difficult to employ Pioneers in technical work of this kind at manœuvres, both from the fact that damage cannot be recklessly done to crops, trees, &c., and that sham fights last a much shorter time than real engagements.

"Both those who *plan* as well as those who *execute* Manœuvres are to pay particular attention to the necessity of making these exercises useful for the training of Pioneers as well as the other arms.

"If the technical work cannot be actually carried out, the Pioneers that would have to do the work in reality are to be taken to the spot and kept there as long as the work would last, were it really carried out. The Pioneer Officers are to make all the necessary arrangements, take practical hints on the military situation, estimate according to their experience and ability the time the work would take, and then report to the Officer in command. The umpires will then consider whether the work, such as, for instance, the destruction of a bridge, the throwing up of an earthwork, and so on, would have been possible in the time estimated, and make their decisions accordingly.

"Manœuvres are of especial advantage as regards the training of Pioneers, inasmuch as the works of the latter should be always most intimately connected with the action of the troops taking part in the sham fights; and the very short spaces of time often available for making such works are means again of giving Pioneers opportunities of seeing their practical utility, which opportunities they do not get, as a rule, on their own practice grounds. For instance, in real war it might be often in some cases of the greatest importance to rapidly put in a state of defence a village which the Infantry had carried, so as to better resist any effort of the enemy to retake it, or, in others, to assist the attacking troops by the destruction or removal of natural or artificial obstacles.

"The Senior Engineer Officer of any party or detachment of Pioneers is always to be kept informed, by the Officer Commanding, of his general intentions. In this respect he should submit to the latter any proposals he may think fit, and take his opinion or decision thereon. But he must not forget to act, if necessary, on his own responsibility. He should be able to judge for himself what the troops require, and meet their requirements. He must not, therefore, wait for orders, but must be prepared to act on his own judgment of the situation.

"Officers commanding Companies of Pioneers are not, therefore, tied to their men. They are free to move independently, and can consequently send their Officers to reconnoitre in all directions, one only remaining in charge of the Company.

"It is very desirable in war, and will be of advantage as regards the training of Pioneer Officers generally, if they are recognized as mounted Officers.

"Pioneer Companies should not be split up unless absolutely necessary. If possible, they should always have a horsed tool and implement wagon, and any bridge train taken to the Manœuvres should always be with the Companies. The wagons must be always packed according to regulation."

The above clearly shows the spirit in which it is intended Pioneers should be trained in peace for employment in war, and is a proof of the tendency there is with the highest military authorities in the German service to make them more and more a fighting arm—a fourth arm, in fact, if we may use the expression, to the other three. The only difficulty is that, with all that is expected of them, they are only given the same length of service with the colours as the Infantry—the minimum which the Germans stoutly maintain it is possible to make a soldier in.

From November—the month in which the annual contingent of recruits join—till about the middle of February is passed in recruit drill for the new contingent, after which the recruits are posted to the Companies, and then go through Company, and afterwards Battalion, drill. During the summer months, when practical instruction in field-works, mining, pontooning, &c., is carried on, Battalion drill and exercise take place once a week, and musketry goes on all the while from spring to autumn.

In every Battalion of Pioneers the first three (or Field) Companies are trained during the summer months in such works as :—field fortification in its various branches, but more especially such works as would be required during active operations in the field, road-making in its various branches, pontooning and bridging in its various branches, demolitions, mining only to such an extent as is required for purposes of demolition, and the making of huts, shelters, field-kitchens, latrines, obstacles, and other minor matters.

The 4th Company only is more particularly trained in siege works and mining in all its branches.

Every Battalion has its own practice ground and stores.

Every year large exercises take place connected with Engineer operations, in which a considerable number of Companies are united under the command of an Inspector of Engineers. Such exercises generally consist of siege operations on a large scale, carried out with the co-operation of Infantry and Artillery; large pontooning operations on some broad river, such as the Rhine or Elbe, by the Field Companies; and mining and counter-mining on a large scale by the 4th Companies.

These siege operations generally last about six weeks, and are made to resemble real warfare in every way as far as it is possible.[1]

Telegraphs.[2]

Strictly speaking, there is no Telegraph Corps in the German Service, though telegraph work is to a certain extent done by the Railway Regiment; and the Engineers, in case of war, as things stand now, would have to undertake a considerable amount of work connected with the Field and Etappen Telegraphs in conjunction with the Railway Regiment. Things probably will be mended in course of time, and in all probability we shall see a Telegraph Corps springing into existence, and, like the Railway Corps, placed directly in all matters under the General Staff. The following, however, is the system at present pursued as regards the training of Engineer Officers and non-commissioned officers and men of the Pioneers in telegraph work :—

On the 1st April of every year, a subaltern Officer of Engineers is sent on command to serve for six months at the "Direction of State Telegraphs." After three months at this work he takes command of a detachment of Pioneers and trains them in field-telegraph duties in connection with certain Officers studying at the Artillery and Engineer School. In the months of August and September, on the occasion of the Great Annual Autumn Manœuvres, a Field Telegraph Detachment is formed pretty nearly as on a war footing, under a Captain of Engineers, with the subaltern Officer referred to and certain civil employés belonging to the State Telegraphs, who would be called upon to join in case of mobilization.

Non-commissioned officers and privates of the Pioneers are also temporarily attached to Offices of the State Telegraphs, so as to practically learn telegraph work.

Still, however, seeing how thoroughly and methodically everything else is done in the German Army, it cannot be said that Military Telegraphy has received as yet the attention it deserves, and there is very little doubt but

[1] In the months of August and September, 1883, siege operations were carried on at Graudenz for about five weeks. There were assembled 8 Mining (or 4th) Companies and 1 Field Company. At Coblentz, in 1884, siege operations were carried out near Fort Alexander, at which were assembled the Rhine (8th) Pioneer Battalion and the 4th Companies of the 7th, 9th, 10th, 11th, 14th, 15th, and 16th Battalions, and 2 Companies of the 13th Battalion, or 13 Companies in all.

[2] For further detail on this subject, see "The Organization of the Electric Telegraph in Germany for War Purposes," Vol. XXVIII, No. CXXVI (1884), p. 777 of the Journal.

that, very shortly, we shall see both Field and Etappen Telegraphs better provided for in war, by the formation in peace of a permanent Telegraph Battalion or some such formation.

Signalling.

Signalling does not as yet find much favour with the German military authorities. Experiments were made, however, with an apparatus invented by Captain Buchholz of the Railway Regiment, at the Great Manœuvres of 1882. The results were considered satisfactory, but nothing has as yet been settled as regards the employment of this apparatus in the field, and the tendency in the German Service is still in favour of the portable Morse and insulated cable, and against optical telegraphy or signalling.

Electric Light.

The German Army possesses some portable electric lighting apparatus; according to the "*Allgemeine Illustrirte Militär-Zeitung*," six. The apparatus consists of a Dolgoruki steam-engine, a Hefner-Altenech dynamo, and a Siemens reflector, carried on a specially filled wagon.

It is considered in Germany that the electric light may be very useful in war, both in siege and active operations, and one of the uses it is likely to be turned to is searching the field of battle at night for the wounded.

Carrier Pigeons.

The Carrier Pigeon service in Germany belongs to the Military Telegraph Service, and is therefore under the Inspector of Military Telegraphs.

There are many private carrier pigeon clubs in Germany encouraged by the Government, and there are besides regular military carrier pigeon establishments as well.

In 1874 four of these were formed at Berlin, Cologne, Strasburg, and Metz respectively, comprising altogether 300 pairs of pigeons of the well-known Belgian or Antwerp homing breed. These are under the *Platz-Commandanten* of the garrisons in question, the establishment in each case being really in charge of an *employé* of the Engineers, assisted by 3 or 4 attendants.

Since 1874 six additional carrier pigeon establishments have been formed at Würzburg, Mayence, Wilhelmshaven, Kiel, Danzig, and Tönning. The last four are for naval purposes, and consequently under the Admiralty.

The use of carrier pigeons in war is at present attracting considerable attention in the German Army. According to the "*Deutsche Heeres-Zeitung*" of the 30th May of this year, there are on an average 500 pigeons at Metz, Strasburg, Würzburg, Cologne, Mainz, Königsberg, Posen, and Thorn respectively. There are also, according to the same authority, large private carrier pigeon establishments at Hanover, Altona, Danzig, Berlin, and other places, encouraged by the Government for military reasons.

Balloons.

In Germany, as in other countries, efforts have for some time past been made to turn balloons to account for military purposes, but as yet nothing very satisfactory or definite has been arrived at in their use and management.

In the War of 1870–71 captive balloons were used at the siege of Strasburg, but the results obtained do not appear, on the whole, to have been very satisfactory.

The question was allowed to rest for a considerable time after the war, and was only seriously taken up after the lapse of some ten years. In 1882 some experiments were made in the neighbourhood of Berlin with a balloon

invented by the Herren Baumgarten and Wölfert, and containing 300 cubic metres of gas. It was supposed to be steerable by means of screws worked by a special contrivance. The results do not appear to have given satisfaction.

Another steerable balloon—the invention of Herr Wald, and described in the "*Deutsche Heeres-Zeitung*" of the 15th August, 1883—was also tried shortly afterwards, but nothing definite or practical was arrived at.

By an order of the Berlin War Office of the 9th May, 1884, however, a balloon detachment was formed at Berlin, consisting of a Captain of the Railway Regiment and 3 Lieutenants and 30 non-commissioned officers and men from various corps, with the view of making experiments with a captive balloon. The detachment is further assisted by a professional aeronaut.

Submarine Mining.

Submarine mining is considered in Germany more a naval than a military service, and the defence of the Imperial Dockyards by torpedoes is left to the Admiralty. The Pioneers have, nevertheless, recently been called upon to take up the subject in addition to their already numerous duties, as it was foreseen that submarine defences might not only be necessary at parts of the German coast where there were no naval establishments, but might be used in rivers.

With this object a Company from each of the 1st, 2nd, 9th, and 10th Pioneer Battalions, stationed at Danzig, Stettin, Rendsburg, and Minden respectively, is annually put through preliminary training for 6 weeks, and subsequently practical instruction for 14 days, in submarine mining.

War Organization.

Mobilization.

On mobilization, a Battalion of Pioneers would form—

a. A Battalion Staff, which would join the Staff of the General commanding the Army Corps.

b. Three Field Companies, one being permanently attached to each Division, and the third to a Division at the discretion of General commanding the Army Corps.

c. Two Divisional Bridge Trains, one to each Divisional Pioneer Company (except in the 16th Pioneer Battalion).

d. One Corps Bridge Train with a special detachment of Pioneers.

The three Field Companies are brought up to war strength by Reservists to at once take the field with the Army Corps, but the 4th (or Miner) Company, on mobilization as a Siege Company, has to give cadres for both a Reserve Company and a second Siege Company. These three Companies are then brought up to war strength by Reservists and Landwehrmen. The Reserve Companies would then be attached to such Reserve Divisions as would be formed to reinforce the army in the field or to garrison large fortresses, and the Siege Companies would be attached to armies engaged in the attack or defence of fortresses.

The Pioneer Battalion of the Guard would form 2 Reserve Companies and only 1 Siege Company.

The 16th Pioneer Battalion would form 6 Siege Companies from all its Companies on a peace-footing, with Reservists and Landwehrmen.

The Pioneer Battalion of the Guard would in addition form 4, and the 7th (Westphalian) Battalion 3, Field Telegraph Detachments; and the 4th (Magdeburg) Battalion would form 3, and the 11th (Hessian) Battalion 2, Reserve Field Telegraph Detachments.

The Field Companies take the field on mobilization under their respective Captains, and are then in all purely military matters, discipline, &c., under the General commanding the Division or other unit they may be attached to. Technical matters, of course, are referred to the ex-Battalion Commander on the Staff of the Army Corps.

The Divisional Bridge Train is under the orders of the Officer commanding the Pioneer Company to which it is attached. It is permanently accompanied by 1 non-commissioned officer, 1 lance-corporal, and 16 privates detached from that Company.

The Army Corps Bridge Train is under a Captain of the Train, but, if any bridging operations were undertaken with it, a Company (at least) of Pioneers would be employed, and the senior Engineer Officer present would then take charge of the work.

An Army Corps Bridge Train is accompanied by a permanent detachment of 2 Officers, 61 non-commissioned officers and men, and 1 bugler, of the Pioneers.

If all these trains were employed to throw a bridge, the Commanding Engineer on the Army Corps Staff, that is to say, the Officer commanding the Pioneer Battalion of the Army Corps previous to mobilization, would superintend the operation, or, in his place, the next senior Engineer Officer present.

The different field formations made by a Pioneer Battalion on mobilization, when it is practically broken up, are given in Table I.

Companies Nos. 1 to 3 of the Battalion on a peace footing furnish the men necessary for the detachment given to the Army Corps Bridge Train, and certain non-commissioned officers would also be detached from these Companies to the Reserve formations that would be created on mobilization. These Companies would then be brought up to war strength by the youngest contingents of the "*Beurlaubtenstand*" or men on unlimited furlough.

The Train *personnel* comes from the Military Train Battalion of the Army Corps the Battalion belongs to.

The Army Corps, when mobilized, comprises 19 Engineer Officers (one being a Field Officer), 7 Train Officers, 665 non-commissioned officers and men of the Pioneers, 270 non-commissioned officers of the Train, 467 horses, and 74 carriages.

Arms and Ammunition.

Non-commissioned officers and men, with the exception of sergeant-majors, vice-sergeant-majors, and buglers, are armed with the short Mauser breech-loading rifle of the 1871 pattern, with which the German *Jägers* or Rifles are armed, and a sword-bayonet of a special pattern, called a *Pionier-Faschinenmesser*, having a saw back. Non-commissioned officers and men armed with rifles carry 30 rounds in a pouch on the waist-belt.

Mounted non-commissioned officers, trumpeters, and lance-corporals of the train, belonging to the Bridge Trains, are armed with an old-pattern cavalry sword and a converted Chassepôt carbine of the 1871 pattern. In the Saxon Army Corps the carbine is a converted Chassepôt cavalry carbine of the 1873 pattern. 20 rounds are carried by every non-commissioned officer or man armed with a carbine. Mounted drivers and orderlies are armed with an old-pattern cavalry sword. Dismounted train soldiers are armed with old-pattern infantry side-arms. Bavarian Pioneers are armed with the Werder carbine of the 1869–75 pattern, but are to have the Mauser short rifle of the 1871 pattern. The Werder rifle has the same calibre as the Mauser and takes the same ammunition; the difference is only in the breech-closing apparatus, the former being on the block, and the latter on the bolt, system.

The powder wagon of a Pioneer company carries 280 kilogrammes

(617 lbs.) of gun-cotton, and would replenish this stock from the Field Ammunition Park (*Feld-Munitions-Park*). Every column of the latter carries 1,500 kilogrammes (3,306 lbs.) of ordinary powder, or a corresponding amount of gun-cotton. A similar supply of explosives is kept in every chief ammunition depôt (*Haupt-Munitions-Depôt*).

Tools.

Every Pioneer Company has the following portable tool equipment :—

Carried by the men in leather cases : 88 large shovels, 44 picks, 45 axes, and 17 hatchets.

Carried in the Company tool wagon : 60 large shovels, 30 picks, 20 axes, 12 saws of various kinds, 6 crowbars, &c.

Total :—148 large shovels, 74 picks, 65 axes, 17 hatchets, 12 saws, &c.

A Divisional Bridge Train would have—

(*a*) In the 3 tool wagons : 600 large shovels, 150 picks, 90 axes, 30 saws, 24 hammers, 12 billets, 12 pickets, &c.

(*b*) In the bridge equipment wagon : 3 axes, 1 hatchet, 3 saws, &c.

(*c*) In the other wagons : 14 large shovels, 14 picks, and 14 hatchets.

Total :—614 large shovels, 164 picks, 93 axes, 15 hatchets, 33 saws, &c.

An Army Corps Bridge Train would have in its 2 tool and equipment wagons : 6 axes, 2 hatchets, 9 saws, 8 hammers, 4 billets, 2 pickets, &c., and each of the 33 wagons forming the train would be provided with a shovel, a pick, and an axe.

Rations.

A Pioneer carries in the field, as every other dismounted fighting soldier of the German Army, 3 days' "iron rations," which he cannot touch without an order. A day's forage is carried for every riding-horse and 3 days' forage for every draught-horse.

A fourth day's ration *per* man may be carried in a requisitioned wagon per Company.

Clothing and Equipment.

The clothing and equipment regulations are the same in the main for the Pioneers as for the Infantry. The following are the only differences : Pioneers carry but one pouch (worn in front on the waist-belt on the right side), whereas the Infantry have two ; on the other hand, Pioneers have a canvas working frock more than the Infantry. The tools are carried fixed to the left side of the knapsack, and the coffee-mills and other small things are carried in the wagons. There are 11 of these mills issued to a Pioneer Company, 3 to a Divisional Bridge Train, and 10 to an Army Corps Bridge Train.

Non-commissioned officers, trumpeters, and lance-corporals of the train of the Bridge Trains wear helmets and white cross-belts, with a plain black pouch. The men wear cloth caps with peaks, chin-straps, and cockades ; mounted men wear pantaloons and boots of the dragoon pattern. Train soldiers' kits are carried in valises and not knapsacks.

The saddlery and harness is of the Artillery pattern, but with the exception that the off-horse has a pad instead of a saddle, thus diminishing the weight carried.

A Company of Pioneers carries the following reserve articles of clothing, equipment, &c., in its wagons : 3 bugles, 20 cholera belts, 20 pairs of boots 10 pairs of half-boots or shoes, 10 forage caps, 10 tunics (1 for a non-commissioned officer), 10 stocks, 10 pairs of cloth trousers, 10 pairs of canvas trousers, 20 pairs of drawers, 10 great-coats, 10 shirts, and 20 canvas frocks.

Bridge Trains carry a reserve of from four to five per cent. of such articles as are most liable to deteriorate, and, in addition, a Divisional Bridge Train carries 2 trumpets, 10 cholera belts, 6 pairs of boots, and 4 pairs of half-boots or shoes, and an Army Corps Train carries 2 trumpets, 20 cholera belts, 12 pairs of boots, and 8 pairs of half-boots or shoes.

In Prussia and Würtemberg the tunic is dark-blue with crimson piping; the facings, known as the Swedish pattern, are black, with crimson piping; the buttons white. The shoulder-straps are crimson, with the number of the Battalion on them in yellow, excepting in the Battalion of the Guard. In the latter, the facings have the usual Guard distinction (*Litzen*), two white stripes, with a black line between, on the collar and cuff. The trousers, boots, and great-coats are the same as in the Infantry. The shoulder-straps of the great-coat are red in the Guard Battalion, but dark-blue with red piping in the other Battalions. The helmet is of the Infantry pattern, but with white metal ornaments. Battalions Nos. 1 to 11 and 15 and 16 have the Prussian Eagle (*Wappen-Adler*) on the helmet; the Guard Battalion has the Guard Eagle, and the 14th (Baden) Battalion the Baden Griffin; the 12th (Saxon) and 13th (Würtemberg) Battalions have their respective Royal coats-of-arms on the helmet. The Guard Battalion helmet has a black horse-hair plume for full dress, the buglers' and bandsmen's helmet a red one.

The Bavarian helmet is the well-known Bavarian one with no spike, but a tufted crest.

The forage cap is dark-blue with black band and red piping. The belts are black. The knapsack is of the Infantry pattern, but has only one cartridge compartment on the right side. In the Battalion of the Guard the metal hooks on the knapsack straps, to hook on to the waist-belt, are ornamented with a grenade. The distinctive colours of the sword-bayonet knot are those of the 1st four Companies of an Infantry Regiment.

In the Saxon Army Corps the tunic is dark-green with crimson facings; the shoulder-straps are green with a red edging, and have on them the number of the Battalion, with a crossed pickaxe and shovel. The forage cap is dark-blue, and like the Prussian.

In the Bavarian Battalions the dress is the same as in the Prussian, except that the trousers are the same colour as the tunic, and the helmet is of the Bavarian pattern, with yellow metal ornaments.

Pioneers forming the detachments of Army Corps Bridge Trains are clothed and equipped as other Pioneers, but carry no tools. The non-commissioned officers of the train of the Bridge Trains wear the Pioneer uniform, with the exception of certain minor details already alluded to. The saddle-cloths of the non-commissioned officers are dark-blue, with a black edging and red piping. Their sword-knot is of the Cavalry pattern. That of the mounted drivers is of black leather.

The distinguishing marks of rank are the same as in the other arms.

The velvet facings of the Officers are embroidered in silver.

The Railway Regiment wears the same uniform, &c., as the Pioneer Battalion of the Guard, with the letter E (*Eisenbahn*) on the shoulder-straps and epaulettes.

Transport (Companies).

A Pioneer Company in the field has the following wheeled transport:—

1 Baggage wagon.
1 Tool wagon.
1 Powder wagon.
1 Canteen wagon.

The baggage wagon is two-horsed and of the 1870 pattern. It carries the

personal baggage of the Officers and sergeant-major, and the reserve clothing and equipment.

The tool wagon is four-horsed and of the 1875 pattern. It only differs from the ordinary Battalion wagon of the 1867 or 1873 pattern in the interior fittings and certain minor details.

The Bavarian tool wagon is of a special pattern.

The powder wagon differs from the old-pattern Artillery ammunition wagon in its interior fitting, and the absence of seats and other arrangements for carrying gunners.

The tool and powder wagons are considered as light baggage (*Kleine Baggage*), that is to say, they are never separated from the Company, and follow it on to the field of battle.

Transport (*Bridge Trains*).

The wheeled transport of the Bridge Trains is as follows :—

A Divisional Bridge Train.		An Army Corps Bridge Train.		
1	....	1	Baggage wagons, two-horsed.	
1	....	2	Wagons with open rail-sides (*Leiterwagen*).	Four-horsed.
3	....	—	Pioneer tool wagons.	Four-horsed.
2	....	2	Trestle wagons.	Six-horsed.
2	....	2	Pontoon wagons, with cleated baulks.	Six-horsed.
4	....	24	Pontoon wagons, with ordinary baulks.	Six-horsed.
1	....	2	Wagons for bridging gear, stores, &c.	Six-horsed.

This enables the following bridging equipment to be carried :—

By a Divisional Bridge Train : 6 pontoons and 4 trestles, enabling 4 bays of bridge with cleated baulks (or trestle bays) and 4 bays with ordinary baulks (or pontoon bays) to be thrown.

By an Army Corps Bridge Train : 26 pontoons and 4 trestles, enabling 4 bays with cleated baulks (or trestle bays) and 24 bays with ordinary baulks (or pontoon bays) to be thrown.

The bays with cleated baulks (or trestle bays) are 5 metres and the bays with ordinary baulks (or pontoon bays) 4½ metres from centre to centre.

With a Divisional Bridge Train a bridge of 36½ metres may be thrown, using 5 pontoons and 2 trestles, forming 2 end bays (of 5 metres each), 2 pontoon and trestle bays (of 4½ metres each), and 4 pontoon bays (of 4½ metres each). Using the long bay, the bridge might be made longer, but with the 150 chesses carried only 39 metres of bridge could be planked.

With an Army Corps Bridge Train a bridge of 122 metres could be thrown, using 24 pontoons and 2 trestles. With the 510 chesses carried the longest bridge that could be planked would be 132·60 metres.

An Army Corps has thus enough bridging equipment for throwing a bridge of from 195 to 210·60 metres.

The usual bay employed in the German pontoon bridge is the *short* bay, that is to say, when the baulks rest on all four gunwales. In the *long* bay the baulks rest on both gunwales of one pontoon and on one gunwale only of the other.

Bridges thrown with the usual bay of 4½ metres, and with a roadway of 3·08 metres in the clear between the ribands, can take troops with Field Artillery and Trains. Infantry pass in file (3 deep) or sections of four files,

breaking step; Cavalry in twos, the men leading their horses; Artillery and Trains by single carriages, the drivers (from the saddle) dismounted. If there is a prospect of a crush, or heavy Artillery is to cross, the length of the bays are diminished by inserting an additional pontoon in every bay.

It takes about 40 minutes for a Divisional Train, and 140 minutes for an Army Corps Train, to discharge wagons and stores on the bank, ready to form bridge (5 minutes per wagon); and it takes 40 and 116 minutes to form bridge in either case under ordinary conditions (3 minutes per pontoon bay and 6 minutes per trestle bay).

If the wagons are not simultaneously unloaded on the bank, but one by one as the bridging progresses, it takes 50 minutes in the case of the Divisional Train and 145 minutes in the case of the Army Corps Train, to form bridge (5 minutes per pontoon bay and 10 minutes per trestle bay); but in this case the working party must be a very strong one.

These *data* only hold good if no ramps have to be cut, if the bottom is good holding ground, and if the current is moderate. As a general rule, half a day should be reckoned on as the time required to throw a bridge with the Bridge Trains of an Army Corps.

The two-horsed baggage wagon of the 1870 pattern carries the personal baggage of the Officers and serjeant-major, the reserve clothing, the coffee-mills, the veterinary field companion, 2 forage sacks, two pairs of horse-shoes with 32 nails, tailors', shoemakers', and various other small stores, and 2 or 5 horse-cloths, according as the wagon is a Divisional or Army Corps Bridge Train one.

An Army Corps Bridge Train carries in addition a cash box, 1 box of marking stamps, and a medical field companion.

A four-horsed wagon with open rail-sides (*Leiterwagen*) of the 1859 pattern takes in the Divisional Train 1 heavy anchor and cable, 2 trestle shoes, 2 suspension chains, 1 warp, spare small stores for wagons, 8 forage sacks, 2 sickles, the valises and cooking-kettles of the train soldiers, &c. In the Army Corps Train it takes two heavy anchors, 1 grapnel, 1 cable, 2 standards for hand-rail, 3 warps, 2 crab capstans, spare small stores for wagons, 8 forage sacks, 1 scythe, 2 sickles, and the valises and cooking-kettles of the train soldiers, &c.

The four-horsed Pioneer tool wagon of the 1875 pattern carries the tools already given at page 1179, 4 forage sacks, and other small stable stores.

The Bavarian Pioneer tool wagon differs somewhat from the German in pattern.

The pontoon wagon is close-locking. It carries a pontoon, 7 baulks, 18 chesses, 1 light anchor, 1 or 2 cables, 3 oars, 6 forage sacks, and certain small stores.

The German pontoon is of galvanised sheet iron. It is 7·50 metres long, 1·50 metres wide, and 0·81 deep inside; it weighs 450 kilogrammes and cannot be used in less than 0·60 metres of water.

The cleated baulks are 5·50 metres long, 0·15 metre deep, and 0·10 metre wide. The cleats are of oak, and are fixed by an iron bolt and two iron straps.

The ordinary baulks are 6·60 metres long, 0·13 metre deep, and 0·105 metre broad. They are made of pine or deal, and weigh 45 kilogrammes each, and have holes at each end to take the iron pins of the wagons on which they are carried.

The trestle wagons are similar to the pontoon wagons, and can be used as such. A trestle wagon carries 7 cleated baulks, 21 chesses, 4 trestle transoms, 6 trestle legs (4 long and 2 short), and certain small stores, stable utensils, &c.

The German trestle can be used in water as deep as 2·50 metres.

The bridging store and equipment wagon of the 1858 and 1859 pattern is a single large van with curved top and a box behind and before. It carries bridging gear, Pioneers', carpenters', smiths', and saddlers' tools, harness and saddlery, veterinary stores, 6 forage sacks, 23 pairs of horse-shoes with 500 nails, &c.

The Bavarian wagon of this kind is only slightly different from the tool wagons of the Bavarian Pioneer Companies.

Tactical Notes.

We have seen what stress has recently been laid in the German Service on Pioneers being brought more forward at manœuvres in a tactical sense, and taking their place in the fighting line with the most advanced troops. The following notices on the means taken to ensure that this is actually the case in the field are, therefore, interesting and instructive.

Pioneers are assigned places in the columns of route of Divisions and Army Corps, so that they may be in a position to fulfil what is tactically required of them in the face of the enemy, either on the march or on the field of battle.

In the column of route of a Division, one-third, that is to say, a section, of the Divisional Pioneer Company would accompany the advanced guard, and the Officer in command would make it his especial business under ordinary circumstances to see that the road was practicable for all arms. The remainder of the Company, with the Divisional Bridge Train, would be with the main body of the Division, but under certain circumstances the Bridge Train might even accompany the advanced guard.

In the column of route of an Army Corps (2 Divisions on one road) one Pioneer Company with the Divisional Bridge Train would, as a rule, accompany the advanced guard; the other two with the other Divisional Bridge Train would be with the main body.

The Army Corps Bridge Train forms part of the first *échelon* of the Army Corps Trains which follow the Army Corps at a distance of from 3 to 6 miles.

The way in which the Pioneers would be employed in action must of course depend on circumstances, and would be very different in actions fought offensively or defensively. In the former case they would chiefly be employed in repairing bridges, removing obstacles to the advance, in other words, favouring the attack, and in certain cases rapidly placing farms, villages, &c., in a state of defence to resist counter-attacks; whereas in the latter case they would be more systematically employed in fortifying and strengthening positions, villages, farms, &c., for defence. In either case the immense importance of working in harmony with the other arms, and being guided by what is tactically required of them, cannot be overrated. The ideas of the Pioneer Officers and those of the General in command in questions of attack and defence, must be one and the same. Hence everything must be done according to certain well-known general principles; if this is the case, details are of minor importance. Another very important consideration is that the Pioneers should be with their tools and appliances where they are required, *at the right time and place*, and we see that the Germans with this object keep them well to the front in the column on the march, and take care they do not get relegated with their wagons to the rear, which the experiences of the 1866 war showed was too often the case in that campaign.

As a rule, the order to use the Divisional Bridge Train would rest with the General commanding the Division, but if the case were urgent the Officer commanding the Divisional Pioneer Company could do so on his own responsibility, merely informing the General of the fact. Similarly the Army Corps Bridge Train would, as a rule, be only used by order of the General

commanding the Army Corps, except under special circumstances. In all these questions, however, great latitude is allowed in the German Service, and the taking of responsibility is encouraged, with the knowledge that the proper spirit exists.

Fortress Companies.

Fortress Pioneer Companies (Siege Engineers or Sappers and Miners) are intended for the duties their title implies. They are formed, on the Pioneer Battalions being mobilized, from the 4th (or Sapper and Miner) Companies of these Battalions, and in the case of Bavaria, from the 4th and 5th Companies of the Battalion. Each of these Companies would form the cadres of two Fortress Companies, and these would be brought up to their war strength by Landwehr men. In the Bavarian Service the Field and Fortress Companies are distinct in peace.

42 such Companies could be formed, in case of war, in Germany altogether, and these would probably be grouped in some 10 Battalions.

The establishment of an unmobilized Fortress Company, that is to say, a Company attached for the time to the home garrison, would be: 4 Officers, 1 Surgeon, 20 non-commissioned officers, 3 buglers, 177 lance-corporals and privates, 1 hospital assistant, and 1 riding-horse.

When mobilized, that is to say, when equipped to undertake a siege, a Fortress Company would be given 4 tool wagons, and the same number of train soldiers and canteen men as a Field Company. Its strength would then be: 4 Officers, 211 non-commissioned officers and men, 1 Surgeon, 2 canteen men, 18 horses, and 4 wagons. Fortress Companies are armed, clothed, and equipped as Field Companies, but they wear the Landwehr cross on the head-dress.

Depôt Companies.

A Pioneer Battalion on being mobilized forms a Depôt Company at its head-quarters. Its establishment would be: 4 Officers, 31 non-commissioned officers, 4 buglers, 227 lance-corporals and privates, 1 Surgeon, 1 hospital assistant, 1 paymaster, 1 assistant paymaster, 1 riding-horse, and a detachment of regimental tradesmen (tailors, shoemakers, &c.) *hors rang*, consisting of 5 non-commissioned officers and 70 men.

A Depôt Company would at once receive 50 recruits taken from the 1st class Ersatz Reserve or partially trained men.

The number of these in Germany in 1883 was over 2,800. It would appear, indeed, that, from the number of men available, there would be no difficulty in increasing either the number of Fortress Companies or Depôt Companies, were it desirable.

The *Feldwebel-Lieutenants*[1] of these Companies would wear the same uniform as Lieutenants of Engineers, less the silver embroidery on the collar and cuff, and the keepers for the epaulettes. The lace on the collar and the facings of the tunic would be the same as in the Infantry, as well as the buttons, &c., but in silver instead of gilt. The lining and piping of the shoulder-straps are crimson. The trousers and sword as in the Infantry, but no knapsack would be carried.

Reserve Troops.

A Pioneer Battalion should, on mobilization, form a Reserve Company. The mobilization of the three Field Companies and the detachment belonging to the Army Corps Bridge Train, and the formation of a Reserve Company,

[1] Ex-sergeant-majors of Pioneers volunteering their service in case of war with this rank.

requires 865 Pioneers. A Battalion can reckon on 12 contingents, or 1,724 men; the surplus, or 859 men, is more than enough to constitute the additional formations required of a Pioneer Battalion on mobilization, that is to say, a Depôt Company, 2 Fortress Companies, and 15 Telegraph Detachments.

A Bavarian Battalion, in which 200 men are annually enrolled instead of 160, can reckon on 12 classes of 2,155 men.

A Depôt Company of Pioneers requires 214 men in addition to 50 recruits; a Fortress Company requires 201 men; and the 15 Telegraph Detachments absorb 1,350 men.

Of the 19 Reserve Companies thus formed, 8 or 12, say, might be attached to the 4 Reserve Army Corps which, it is contemplated, might be formed in case of war on a large scale, and there would then be still 10 or 8 Companies available for the 16 Reserve Divisions that might be formed as well. It would not appear, however, that a complete Pioneer Company would be necessary for each of the latter, certainly not for those that would be kept at home or in large entrenched camps. Nevertheless, from the numbers quoted, there would be no difficulty in forming, in case of necessity, a certain number of supplementary Companies, and whether they be called Reserve Companies or Fortress Companies, matters little.

The establishment of a Reserve Company would be the same as that of a Field Company, but it appears, according to some authorities, that, as there would be no Bridge Trains with Reserve Divisions, a Reserve Company of Pioneers would have 2 additional tool wagons carrying 200 large shovels, 50 picks, and 30 axes.

The arms, clothing, equipment, &c., would be the same as those of the corresponding Pioneer Companies in first line.

Engineer Siege Troops, Trains, and Parks.

German writers say very little about the organization of their Engineer Siege troops, trains, and parks. The Officers would be taken, in case of war, from the corps of Engineer Officers (*das Ingenieur-Corps*), and the men from the Fortress or Depôt Companies of the Pioneer Battalions. These Companies would be grouped into *combined Battalions* of 3 or 4 Companies each, and 2 or 3 of these Battalions would be combined to form a Regiment.[1]

At the siege of Strasburg in the Franco-German war the direction of the Engineer operations was given to a Major-General, assisted by a Field Officer as Staff Officer, 3 Adjutants, 2 Field Officers as *majors de tranchée*, 5 Captains, and 10 Lieutenants—all Officers of Engineers. There was a combined Regiment of Pioneers, of 3 Battalions; the two first were of 5 Prussian Companies each, and the third comprised 2 Prussian Companies and 2 Baden Companies; one of the latter was a Company of Pontoneers.

At the siege of Paris the direction of the Engineer operations was given to a Lieut.-General, assisted by 2 Adjutants.

The attacks on the south of the city were directed by a Major-General, assisted by a Field Officer as Staff Officer, 3 Adjutants, 2 Field Officers as *majors de tranchée*, 6 Captains, and 5 Lieutenants—all Officers of Engineers. The Prussian Pioneers, under the command of a Colonel, comprised 5 Field Companies, 9 Fortress Companies, and a detachment of photographers. The Bavarian Pioneers, under the command of a Colonel, were in 3 Divisions, comprising 4 Field Companies and 2 Fortress Companies.

The attack on the north side of the city was directed by a Lieut.-Colonel, assisted by an Officer as Staff Officer, an Adjutant, and a Field Officer commanding the Pioneers. These comprised 2 Prussian Fortress Companies and

[1] v. Bonnin, *Die Lehre vom Festungs-Kriege*, Berlin, 1881.

those Field Companies of the Army of the Meuse that were not employed on the works connected with the investment.

At the siege of Belfort the Engineer direction was given to the General who had directed the works at the siege of Strasburg. He was assisted by an Adjutant, 2 Field Officers as *majors de tranchée*, 2 Captains, and 8 Lieutenants. There were 7 Fortress Companies of Pioneers (4 Prussian, 1 Bavarian, 1 Würtemberg, and 1 Baden) grouped in a combined Battalion under a Captain.

PART III.—RAILWAY CORPS.

PEACE ORGANIZATION.

The German Railway Corps consists of a Prussian Regiment of two Battalions and a Bavarian Company. The Prussian Regiment is a distinct service under the General Staff, and does not belong to the Engineer Arm, but the Bavarian Company is like a Pioneer Company, and is officered from the Corps of Engineer Officers.

The first formation of military railway troops was made in the war of 1866, when Field Railway Detachments were put together on mobilization for the first time, and formed chiefly of civilian railway servants and artificers, and, to a small extent, of men of the Pioneers. After the war of 1866 the military element in these detachments was increased, but technical matters still remained in the hands of civilians, and it was not until the year 1871—that is, after the experiences of the Franco-German struggle—that a permanent military Railway Corps was formed. By a Decree of the 19th May of that year a Railway Battalion was created at Berlin, consisting of a Battalion Staff and 4 Companies, with a total peace strength of some 500 men, and this was intended to furnish the Officers and men necessary for the Railway detachments formed on mobilization. In December, 1875, an additional Battalion was created, and the two formed, with a Regimental Staff, into a Regiment (*Eisenbahn-Regiment*) of 8 Companies. The Regiment is quartered at Berlin, and attached to the Guard Corps. The Bavarian Company is stationed at Ingoldstadt.

The Regimental Staff consists of a Colonel in command (with the rank of Brigadier-General), a Major, a Lieutenant as Adjutant, 2 Surgeons and 2 Assistant-Surgeons, a Paymaster, an Acting Paymaster, 4 non-commissioned officers (3 clerks and 1 draughtsman), a bugle-major, 9 buglers and musicians, and 24 lance-corporals and privates (tailors, shoemakers, &c.). A Battalion-Staff consists of a Major in command, a Lieutenant as Adjutant, a Paymaster, an Acting Paymaster, an armourer, and two non-commissioned officers (1 clerk and 1 draughtsman).

A Company consists of a Captain, a First Lieutenant, 3 Second Lieutenants, a sergeant-major, a vice-sergeant-major, 4 sergeants, 11 *Unter-offiziere*, 11 lance-corporals, and from 87 to 88 privates, or a total of 5 officers and 118 to 119 non-commissioned officers and men. There is besides a hospital attendant to each Company.

The total peace establishment of the Railway Regiment would accordingly be : 53 Officers, and from 993 to 1,001 non-commissioned officers and men.

As things actually stand, the Army List of 1885 gives the number of Officers as : 1 Colonel, 3 Majors, 8 Captains, 8 First Lieutenants, 26 Second Lieutenants, 1 Regimental Surgeon, 1 Battalion Surgeon, 1 Assistant Surgeon, and 3 Paymasters, or 52 Officers in all. There are shown also, as attached or *aggregirt*, 2 Retired Majors (one as an aeronaut), and, as doing duty with the Regiment on command, a Second Lieutenant of Infantry.

The Regiment comprises a "Depôt Administration" (*Depôt-Verwaltung*), a "Board of Management of the Military Railway" (*Königliche Direction der*

Militär-Eisenbahn), and a "Traffic Department of the Military Railway" (*Betriebs-Abtheilung der Militär-Eisenbahn*). The first gives employment to one Officer only, the second to 3 Officers under the presidency of the Colonel commanding the Regiment, and the third to three Officers (including the Officer in charge of the Depôt Administration) and a Paymaster, under the presidency of a Major. All these Officers belong to and do duty with the Regiment.

The Bavarian Company consists of 1 Captain, 5 Lieutenants, 26 non-commissioned officers, 3 buglers, 125 lance-corporals and privates, 4 tailors, shoemakers, &c., or a total of 6 Officers and 159 non-commissioned officers and men, besides a hospital attendant.

The Officers of the Railway Regiment are taken partly from the Engineers and partly from the Infantry, but only to a very small extent from the latter. When the Regiment was formed in 1875 but very few Infantry Officers came forward for admission, or at any rate were admitted. The Officers of the Bavarian Company are Engineer Officers, and belong to the Engineer Corps.

The men are not territorially recruited, but taken from all parts of the State and selected naturally from men employed on or connected with railway work, such as guards, engine-drivers, plate-layers, engine-fitters, shunters, pointsmen, &c.

The annual Recruit contingent required for the Prussian Regiment is 175 men per Battalion, or 350 in all, and for the Bavarian Company 55 men.

Clothing and Equipment.

The Officers and men of the Railway wear the uniform of the Pioneers of the Guard with the letter E (*Eisenbahn*) on the shoulder-strap in yellow (gold for the Officers), but the men wear a cloth cap with leather peak, chin strap, and cockade instead of the helmet. The Bavarian Company wears the Bavarian Pioneer uniform with the same distinctions. The men have the same arms, &c., as Pioneers.

The Railway Regiment is in all technical and instructional matters directly under the Chief of the General Staff of the Army; but in matters of discipline and administration under the General Commanding the Guard Corps. The Bavarian Company is for matters of discipline and administration attached to the 1st Bavarian Army Corps; but all matters, technical and instructional, are the business, conjointly, of the Chief of the Bavarian Engineers and Chief of the Bavarian General Staff.

Training and Instruction.

The instruction and training of the Railway Corps may be divided under two headings:—

(*a*) Traffic management in all its branches.
(*b*) The construction, repair, and demolition of lines.

With a view to thoroughly and practically train both Officers and men in the first, a line was laid in 1875 by the Railway Battalion from Berlin by Zossen to the Artillery practice ground in the forest of Kummersdorf, 45 kilometres long, with three stations, at Berlin, Zossen, and the practice ground respectively, besides a halt for changing at Speremberg. This line follows the Berlin-Dresden line as far as Zossen, and thence branches off to the practice ground. From Berlin to Zossen it is open to the public; but from Zossen to the practice ground it is reserved for military purposes.

The traffic and management of this line is exclusively left to the Railway Regiment, the Officers and men of which are thus enabled to practically learn every detail connected with the working of railway trains, &c.

The Board of Management (*Königliche Direction der Militär-Eisenbahn*) comprises the Colonel of the Railway Regiment as chairman, and the Major

of the Staff of the Regiment, a First Lieutenant, and a Second Lieutenant as members. The Major is president of the traffic department of the railway (*Betriebs-Abtheilung der Militär-Eisenbahn*), and it comprises the 2 subalterns of the Board of Management, the Officer in charge of the depôt administration, and a paymaster. There is besides a permanent staff of clerks, draughtsmen, storekeepers, foremen of works, &c., and a temporary contingent of Officers, non-commissioned officers, and men of the Regiment undergoing instruction and training in the various branches of railway duties and management.

The Officers of the permanent staff of the Traffic Department are appointed by the Chief of the General Staff on the recommendation of the Colonel commanding the Regiment, but the appointment of the subordinate *personnel* is left to the Colonel, who also details the Officers and men of the Regiment to be attached for instruction.

As regards the other branch of instruction, the training mainly consists in laying out and constructing new lines, restoring destroyed or interrupted lines, and partial or complete destruction of existing lines. This includes the construction, repair, and demolition of all works connected with railways, such as bridges, tunnels, embankments, stations, permanent ways, rolling stock, signals, tanks and cisterns, besides the laying, repairing, and working of telegraph lines.

The instructions for the training of the Railway Regiment are given in a handbook entitled "Technical Instructions in the Duties of the Royal Prussian Railway Battalion" (*Technische Dienst-Instruction für das Königlich-Preussische Eisenbahn-Battalion*), comprising several parts bearing on the different branches of instruction.

All this training is carried out on a practice ground at Schönefeld, near the barracks the Regiment is quartered in, where stores and all kinds of appliances are kept, and, what is more, liberally expended and annually renewed.

Every year the Railway Regiment sends a detachment to the School of Cavalry at Hanover to give instruction in the repair and demolition of railway and telegraph lines.

With a view to training men of the Regiment in laying new lines without additional expense to the State, detachments of the Railway Regiment are often employed in the construction and maintenance of lines of railway belonging to the State or private companies. The work is carried on by entire Companies. The men work under their own Officers, just as on the regimental training ground, and receive extra pay from the railway authorities, State or private, as the case may be.

In 1874 the Railway Battalion made a bridge and roadway under the circular railway near Berlin, and two others on the Berlin-Dresden line near the latter place. In 1882 a large detachment of the Railway Regiment, under a Captain, constructed a new length of line from Hirschberg to Schmiedeberg.

War Organization.

Mobilization.

On mobilization, the Railway Regiment, just as a Pioneer Battalion, would be broken up, and three kinds of Companies would be at once placed on a war footing; these would be:—

a. Companies of Railway Artificers (*Eisenbahnbau-Compagnien*).
b. Railway Traffic Companies (*Eisenbahnbetriebs-Compagnien*).
c. Companies of Railway workmen (*Eisenbahn-Arbeits-Compagnien*).[1]

[1] The French call these *Compagnies de construction, Compagnies d'exploitation*, and *Compagnies d'ouvriers de chemins-de-fer* respectively.

The exact number of these that would be mobilised in the first instance does not appear to be very clear. It was fixed before the creation of the Second Battalion at 8 Artificer-, 4 Traffic-, and 2 Workmen-Companies, or 14 in all ; but these figures do not represent what might be formed as the requirements of the campaign made themselves felt.

The Artificer Companies would be the first to move from the place of mobilization. Being intended to repair lines found cut or destroyed by the enemy, destroy lines abandoned to the enemy, and lay new lines where required, they would take the field with the troops in the first line. They would be made up to war strength with trained Officers and men actually serving with the Regiment, and Reservists and Landwehr men who had served in it.

The Traffic Companies are intended to manage the railway traffic in the immediate vicinity of active operations, and would follow closely the advancing army for this purpose. They would be made up from the Reservists and Landwehr men of the Regiment, with the addition of Officers, non-commissioned officers, and a few men serving with it.

As regards Reserve Officers, the Army List of 1885 gives 1 Captain, 17 First Lieutenants, and 62 Second Lieutenants, or 80 in all.

As regards men, the Regiment takes annually 350 recruits, so that in course of time the 12 contingents will eventually give it some 3,770 Reserve and Landwehr men (deducting probable casualties) who will have passed through the Regiment, but the actual number of men that would be at the disposal of the Regiment in case of war is more than this.

The Reserve of the Regiment is, in fact, very large, both as regards Officers and men. It comprises not only all Officers, non-commissioned officers, and men who have served in it, but in addition all railway servants and *employés* of every kind belonging to the Reserve and Landwehr, no matter in what arm or branch of the Service they have served. The total number of men that would be available for the Railway Corps in case of war has been estimated at something like 20,000 men.

Bavaria would mobilize an Artificer Company and a Traffic Company.

Thus the whole number of Companies that would be mobilized at the outset would apparently be 9, 5, and 2 of each kind respectively.

An Artificer Company when mobilized would comprise 9 Officers, 211 non-commissioned officers and men, and 11 horses, viz., 1 Captain as Chief Engineer, 2 First and 4 Second Lieutenants as Line Engineers, 1 Lieutenant as a Mechanical Engineer, 1 Lieutenant as a Telegraph Engineer, 1 Surgeon, 1 Paymaster, 25 non-commissioned officers, 3 buglers, 172 lance-corporals and privates, 1 hospital attendant, 11 train soldiers, and 11 riding-horses. The Company would have besides a train detachment consisting of 1 non-commissioned officer, 1 lance-corporal and 8 drivers, 2 riding and 16 draught-horses, with 2 wagons for tools and appliances and 1 wagon with open rail-sides (*Leiterwagen*) for general purposes, drawn by four horses each, and a baggage wagon and a cabriolet for telegraph purposes, drawn by 2 horses each. The 5 wagons cannot take all the stores required by the Company, but, as when repairing a length of railway cut or destroyed by the enemy, work would be carried on simultaneously from both ends, it is considered sufficient if the wagons can carry half the tools, stores, &c., required, the other half being carried in the special train by which the Company would be brought to the spot. Each Company would receive, in fact, from State and other railways a specially put-together train, complete, engine and carriages, to take both the *personnel* and *matériel* of the Company, and which the latter would retain throughout the war. These trains would comprise an engine and 20 carriages of different descriptions.

A Traffic Company would comprise : 6 Officers and 211 non-commissioned officers and men, viz., one Captain, one First Lieutenant, 4 Second Lieu-

tenants (the latter would act as station-masters), 1 sergeant-major, 40 non-commissioned officers, 20 lance-corporals, 139 privates besides 11 train soldiers as bât-men, and 2 riding-horses.

Of the 40 non-commissioned officers, 4 would be employed as assistant station-masters, 1 as traffic manager, 12 as engine-drivers, 7 as guards (*Zugführer*), 7 as baggage guards (*Packmeister*), 3 as line inspectors (*Bahnmeister*), and 6 as telegraph clerks.

Of the 20 lance-corporals, 3 would be employed as guards, 1 as foreman of telegraphs, 2 as foremen of platelayers, 12 as firemen, and 2 in charge of stationary engines. Finally, of the 139 privates, there would be 4 shunters, 18 pointsmen, 14 platelayers, 7 engine-fitters, 4 greasers, 2 engine-cleaners, 55 porters, &c., and 35 brakesmen.

A Company of workmen would comprise 2 Officers and 202 non-commissioned officers and men. They would be employed as porters and labourers in loading and unloading trains with warlike and other stores, and as storekeepers and storemen at stations, &c.

The mobilized formations are given in Table III.

Depôt Troops.

The Railway Regiment, on mobilization, would form a depôt (*Abtheilung*) of two Companies and a detachment of Regimental tradesmen (tailors, shoemakers, &c.), *hors rang*.

The Bavarian Company would similarly form a special Depôt Company of its own.

The depôt of the Regiment would, in addition to training men to fill the gaps in the mobilized formations, have to form from the beginning a nucleus for two Traffic Companies.

The Prussian Depôt would remain at Berlin, and the Bavarian one at Ingoldstadt.

The former would number 16 Officers, 85 non-commissioned officers, and 325 lance-corporals and privates, besides 1 Surgeon, 2 hospital attendants, 2 Paymasters and an Acting Paymaster, and 6 riding-horses.

The detachment of regimental tradesmen would consist of 1 Officer, 6 non-commissioned officers, and 100 workmen.

Total Peace Strength of Pioneers and Railway Corps.

The total peace strength of the Pioneers and Railway Troops of the Imperial Germany Army is :—

406 officers.
10,840 non-commissioned officers and men.
154 horses.

The 10,840 non-commissioned officers and men form, then, about $2\frac{1}{2}$ per cent. of the total peace strength in non-commissioned officers and men of the German Army, fixed by Law till 1888, that is to say, 427,274, exclusive of one-year volunteers, armourers, and saddlers.

The proportion of Officers doing regimental duty is about 1 Officer to 26·09 men in the Pioneers and Railway Corps. This is exclusive of Surgeons, Paymasters, and armourers.

The total number of doing-duty officers in the German Army, regimental or otherwise, given in the Budget, is 18,134, exclusive of Surgeons, Veterinary Surgeons, and Paymasters. The actual number on the 1st January, 1885, is given by the "*Deutsche Heeres-Zeitung*" as 13,328 doing duty and 12,075 in the Reserve and Landwehr. There is consequently a deficit of some 4,806 doing-duty Officers.

TABLE I.

FIELD TROOPS.

BATTALION OF PIONEERS.

Staff, 3 Field Companies, and 3 Bridge Trains.

	Officers.	Non-commissioned Officers.								Surgeons and Employés.					Horses.			Carriages.			
	Field and other Officers.	Non-commissioned Officers.	Buglers and Trumpeters.	Lance Corporals and Privates.	Shoeing Smiths.	Hospital Assistants.	Artificers.	Train Soldiers.	Total.	Surgeons.	Paymasters.	Veterinary Surgeons.	Canteen Keepers.	Total.	Riding.	Draught.	Total.	Two-horsed.	Four-horsed.	Six-horsed.	Total.
STAFF OF THE BATTALION.																					
Field Officer Commanding	1	..	..	..	..	..	..	2	2	..	..	..	..	..	4	..	4	—	—	—	—
Lieutenant (Adjutant) ..	1	..	..	..	..	..	..	1	1	..	..	..	..	..	3	..	3	—	—	—	—
Non-commissioned Officer (Clerk)	..	1	..	..	..	..	..	..	1	—	—	—	—	—	—	—	—	—	—	—	—
Train	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	2	2	[1]1	..	..	[1]1
Total Battalion Staff ..	2	1	..	..	..	..	..	4	5	..	..	..	..	..	7	2	9	[1]1	..	..	[1]1
A FIELD COMPANY.																					
Captain Commanding ..	1	..	..	..	..	..	..	1	1	..	..	..	..	..	2	..	2	—	—	—	—
First Lieutenant	1	..	..	..	..	..	..	1	1	..	..	..	..	..	1	..	1	—	—	—	—
Second Lieutenants ..	3	..	..	..	..	..	..	3	3	..	..	..	..	..	3	..	3	—	—	—	—
Sergeant-Major	..	1	..	..	..	..	..	..	1	—	—	—	—	—	—	—	—	—	—	—	—
Vice-Sergeant-Major ..	..	1	..	..	..	..	..	..	1	—	—	—	—	—	—	—	—	—	—	—	—

[1] Baggage wagon.

TABLE I.—*continued.*

	Officers.	Non-commissioned Officers.								Surgeons and Employés.					Horses.			Carriages.			
	Field and other Officers.	Non-commissioned Officers.	Buglers and Trumpeters.	Lance Corporals and Privates.	Shoeing Smiths.	Hospital Assistants.	Artificers.	Train Soldiers.	Total.	Surgeons.	Paymasters.	Veterinary Surgeons.	Canteen Keepers.	Total.	Riding.	Draught.	Total.	Two-horsed.	Four-horsed.	Six-horsed.	Total.
Sergeants	..	4	..	..	..	..	..	..	4	—	—	—	—	—	—	—	—	—	—	—	—
Non-commissioned Officers	..	[1]14	..	..	..	..	..	..	14	—	—	—	—	—	—	—	—	—	—	—	—
Buglers	..	..	3	..	..	..	..	..	3	—	—	—	—	—	—	—	—	—	—	—	—
Lance-Corporals and Volunteers	..	..	..	22	..	..	..	..	22	—	—	—	—	—	—	—	—	—	—	—	—
Pioneers	..	..	..	155	..	..	..	..	155	—	—	—	—	—	—	—	—	—	—	—	—
Assistant-Surgeon ..	..	..	..	..	..	..	..	1	1	1	..	..	..	1	1	..	1	—	—	—	—
Hospital Assistant.. ..	..	..	..	..	..	1	..	..	1	—	—	—	—	—	—	—	—	—	—	—	—
Train	..	..	..	..	..	..	..	5	5	..	..	..	[2]2	2	..	12	12	[3]2	[4]2	..	4
Total	5	20	3	177	..	1	..	11	212	1	..	..	[2]2	3	7	12	19	[3]2	[4]2	..	4
Add 2 similar Companies..	10	40	6	354	..	2	..	22	424	2	..	..	4	6	14	24	38	4	4	..	8
Total, Field Companies	15	60	9	531	..	3	..	33	636	3	..	..	6	9	21	36	57	6	6	..	12
A DIVISIONAL BRIDGE TRAIN.																					
Train.																					
First Lieutenant	1	..	..	..	..	..	..	1	1	..	..	..	..	..	2	..	2	—	—	—	—
Second Lieutenant ..	1	..	..	..	..	..	..	1	1	..	..	..	..	..	1	..	1	—	—	—	—
Non-commissioned Officers	..	7	..	..	..	..	..	..	7	..	..	..	..	..	7	..	7	—	—	—	—

Lance-Corporals and Privates	..	..	..	..	..	..	..	[5]41	[5]41	—	—	—	—	—	—	—	—	—	—	—	—	—
Trumpeters	..	..	2	..	..	..	..	..	2	..	..	..	..	..	2	..	2	—	—	—	—	—
Transport	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	72	72	[6]1	[7]4	[8]9	14	
Spare Horses	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	4	—	—	—	—	
Total, Divisional Bridge Train	2	7	2	..	..	..	..	43	52	..	..	..	..	..	12	76	88	1	4	9	14	
Total, Two Divisional Bridge Trains	4	14	4	..	..	..	..	86	104	..	..	..	..	..	24	152	176	2	8	18	28	
ARMY CORPS BRIDGE TRAIN.																						
Train.																						
Captain	..	..	..																			
Lieutenants	1	..	..	.	..	..	..	1	1	..	..	..	..	..	3	..	3	—	—	—	—	
Non-commissioned Officers	2	..	..	..	..	..	..	2	2	..	..	..	..	..	2	..	2	—	—	—	—	
Trumpeters	..	14	..	..	..	..	..	..	14	..	..	..	..	..	14	..	14	—	—	—	—	
Lance-Corporals and Drivers	..	..	2	..	..	..	..	..	2	..	..	..	..	..	2	..	2	—	—	—	—	
Assistant-Surgeon	..	..	..	..	..	..	..	[10]5[9]	[10]5[9]	—	—	—	—	—	—	—	—	—	—	—	—	
Paymaster	..	..	..	..	..	..	..	1	1	1	..	..	.	1	1	..	1	—	—	—	—	
Veterinary Surgeon	..	..	..	..	..	..	..	1	1	..	1	..	..	1	1	..	1	—	—	—	—	
Shoeing Smith	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	1	—	—	—	—	
Transport	..	..	..	..	1	..	..	..	1	..	..	..	..	..	1	..	1	—	—	—	—	
Spare Horses	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	190	190	[10]1	[11]2	[12]30	33	
	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8	8	—	—	—	—	
Total, Train Detachment	3	14	2	..	1	..	..	110	127	1	1	1	..	3	25	198	223	[10]1	[11]2	[12]30	33	

[1] One of these may be a *Porte-épée-Fähnrich* or Acting Ensign.
[2] One is an Assistant.
[3] Baggage wagon and Canteen wagon.
[4] Tool wagon and Powder wagon.
[5] Five spare.
[6] Baggage wagon.
[7] Wagon with open rail-sides, 3 Pioneers' Tool wagons.
[8] Two Trestle wagons, six Pontoon wagons, and one store wagon.
[9] Ten spare.
[10] Baggage wagon.
[11] Wagons with open rail slides.
[12] Two trestle wagons, 26 pontoon wagons, and two store wagons.

TABLE I—*continued.*

	Officers.	Non-commissioned Officers.								Surgeons and Employés.					Horses.			Carriages.			
	Field and other Officers.	Non-commissioned Officers.	Buglers and Trumpeters.	Lance Corporals and Privates.	Shoeing Smiths.	Hospital Assistants.	Artificers.	Train Soldiers.	Total.	Surgeons.	Paymasters.	Veterinary Surgeons.	Canteen Keepers.	Total.	Riding.	Draught.	Total.	Two-horsed.	Four-horsed.	Six-horsed.	Total.
Pioneer Detachment.																					
Lieutenant in Command ..	1	..	..	..	..	..	..	1	1	..	..	..	..	..	1	..	1	—	—	—	—
Second Lieutenant ..	1	..	..	..	..	..	..	1	1	..	..	..	..	..	1	..	1	—	—	—	—
Non-commissioned Officers	..	7	..	..	..	..	..	..	7	—	—	—	—	—	—	—	—	—	—	—	—
Bugler	..	..	1	..	..	..	..	..	1	—	—	—	—	—	—	—	—	—	—	—	—
Lance-Corporals and Privates	..	..	..	53	..	..	..	..	53	—	—	—	—	—	—	—	—	—	—	—	—
Total, Pioneer Detachment	2	7	1	53	..	..	..	2	63	..	..	..	..	..	2	..	2	—	—	—	—
Total, Army Corps Bridge Train	5	21	3	53	1	..	..	112	190	1	1	1	..	3	27	198	225	1	2	30	33
Total, Bridge Trains belonging to Army Corps..	9	35	7	53	1	..	..	198	294	1	1	1	..	3	51	350	401	3	10	48	61
Total, Pioneer Field Troops with Train in an Army Corps	26	96	16	584	1	3	..	235	935	4	1	1	6	12	79	388	467	10	16	48	74

SUMMARY.

32 Officers, Surgeons, and Paymasters.
941 Non-commissioned Officers and Men.
467 Horses.
74 Carriages.

TABLE II.

Showing the total strength of the Pioneer Troops of the German Empire, available in case of War.

Mobilised Units.	Companies.	Bridge Trains.	Telegraph Sections.	Sections of Tailors, Shoemakers, etc. (*hors rang*).	Officers.	Surgeons.	Employés, various.	Non-Com. Officers and Men.	Horses.	Carriages.
57 Field Companies ..	57	..	..	..	285	57	114	12,084	1,083	228
38 Divn. Bridge Trains ..	..	38	..	..	76	..	..	1,976	3,344	532
19 Army Corps do. ..	..	19	..	..	95	19	38	3,610	4,275	627
19 Reserve Companies[1] ..	19	..	..	..	95	19	38	4,104	513	114
9 Field Telegraph Detachments	..	..	9	..	36	9	81	1,323	684	126
6 Reserve do. do.	..	..	6	..	24	6	120	888	546	102
8 Etappen Telegraph Detachments[2]	..	..	8	..	4	..	292	220	260	56
Siege Parks and Trains	—	—	—	—	—	—	—	—	—	—
42 Fortress Companies[3]	42	..	..	..	178	42	40	8,667	427	85
19 Depôt Companies ..	19	..	..	19	76	19	38	6,422	19	..
33 Landsturm Companies.[4]	33	..	..	..	132	33	..	6,633	33	..
Total[5]	170	57	23	19	1,001	204	761	45,927	11,184	1,870

SUMMARY.

32 Officers, Surgeons, and Paymasters.
941 Non-commissioned Officers and Men.
467 Horses.
74 Carriages.

[1] The same establishment as a Field Company, *plus* 4 train soldiers, 8 horses, and 2 tool wagons.

[2] These detachments are not really formed by the Pioneer Battalions. They are made up of train soldiers and civilian telegraph clerks, and are merely given here to show the total number of Telegraph Detachments.

[3] The establishments are calculated on the supposition that 20 Companies (about one-half) are mobilised and grouped in 5 Battalions, and that the remaining 22 Companies remain at home.

[4] On the establishment of the Fortress Companies remaining unmobilised at home.

[5] Exclusive of siege parks and trains.

TABLE III.

Showing the Formations that would be made at the outset by the Railway Regiment on Mobilisation.

Mobilised Formations.	Officers.	Non-Com. Officers and Men.		Horses.		Carriages.
		Railway Regiment.	Train.	Riding.	Draught.	
9 Companies of Artificers	81	1,800	189	117	144	45
5 Traffic Companies	30	1,000	55	10	—	—
2 Companies of Workmen.. ..	4	404	—	—	—	—
1 Prussian Depôt of 2 Companies and Detachment of Tradesmen.	17	516	..	6	—	—
1 Bavarian Depôt Company[1] ..	2	65	..	1	—	—
Total	134	3,785	244	134	144	45

[1] It is assumed that the Bavarian Depôt Company would be about $\frac{1}{5}$th of the Prussian Depôt.

REVIEWS.

Infantry Fire Tactics.

In the last number of the Journal was inserted a short notice of a book on this subject, written by Lieutenant Mayne, R.E., and published by Gale and Plowden, Chatham. Since the issue of that number the following incident has been related to us. A Line Officer entering a bookseller's shop, and noticing the book on the counter, took it up, and said, "What cheek of an Engineer Officer to write about Infantry Fire Tactics: I will not buy the book." As, from the intrinsic merit of the work in question, it ought to be in the hands of every Officer in the Service, we shall, departing from our usual rule, notice the book again at greater length than on the previous occasion. The only fault to be found with it is, that it was not published anonymously, as, under the existing circumstances, a prejudice, and we are bound to add a very natural one, exists against it, on account of the author belonging to an arm of the Service not usually versed in the tactics, fire or other, of infantry. But Lieutenant Mayne in this work, whilst not concealing his own opinions, has acted mainly the part of a compiler. For five years he has studied a question discussed with eagerness on the Continent, but comparatively neglected in this country. He has condensed from a number of various writings the arguments and practice connected with the question, and he places before the Officers of the Army generally the result of his labours. For many years we have followed the same line of reading as that adopted by Lieutenant Mayne, and to the Officer who declined to purchase the book because an Engineer Officer wrote it, we can only say, "If you don't choose to read this book, you will remain in ignorance of the present position in which infantry tactics stand. You have neither time nor opportunity to go over the vast field traversed by that author, and if you don't read it you are deliberately throwing away a chance of increasing your efficiency as a soldier." German Officers have already spontaneously borne witness to its value, as will those of our own Army when they shall have read it. The headings of the chapters will give a fair idea of the ground covered by Lieutenant Mayne.

Chap.	I.	Introductory.
"	II.	The Power of the Martini-Henry Rifle—Ricochet.
"	III.	Individual Fire—Its Inaccuracy.
"	IV.	Determination of the Accuracy of a Rifle—Dimensions of the Shot-Groupings of a Martini-Henry Rifle for Individual Fire.
"	V.	Practical Trajectories and the limits for Individual Firing.
"	VI.	A French Method of calculating the Efficacy of an Individual Fire at Different Ranges.
"	VII.	Chances of hitting the Objects named with the French Gras (1874) Rifle.
"	VIII.	Determination of Distances.
"	IX.	Concentrated or Collective Fire—Combined use of two or more Elevations.
"	X.	Influence of Ground and Obstacles on the effects of Individual Fire—Inclined Fire—Indirect Fire—Night Firing.
"	XI.	Long Range *versus* Short Range Fire.
"	XII.	Supply of Ammunition on the Battle-field.
"	XIII.	Uncontrolled and Controlled Fire.
"	XIV.	Fire Discipline and the Control and Direction of Fire—Fire Units or Groups.
"	XV.	Tactical Deductions.
"	XVI.	Musketry Instruction.
"	XVII.	The use of Entrenching Tools in the Field.
"	XVIII.	Magazine Rifles.

The price of the book is 6*s*.—L. A. H.

History of the Thirty Years' War. By Anton Gindelay. Translated by A. Ten Broek. Complete in two volumes. London: Richard Bentley, 1885. Pp. 825. Size 8¼″ × 6¼″ × 3½″. Weight 4 lbs. Price 24*s.*

A valuable epitome of the political and social aspects of this most eventful period of German History, more especially to those who are debarred from access to the author's larger works. The translation has also been carried out with care, and although masked at times by variations of expression which are more American than English, is fully deserving of praise. The volumes would be an addition to any library, and are deserving of careful study and comparison with other histories. The illustrations are very curious; but it is a pity that more detailed maps have not been added, the two provided being, Germany from the date of the Reformation to the end of the Thirty Years' War, and Europe from the close of the war to the outbreak of the French Revolution, therefore on a very small scale. As regards the most salient event of the whole war, the death of Gustavus Adolphus on the field of Lützen, the author, notwithstanding his Spanish researches appear to have led him to the discovery that a project for his assassination was submitted to, but not approved by, the Court of Spain, concurs with the most reliable histories of the period in attributing it to the chances of the battle-field. We do not hesitate in recommending this work to the attention of English students of history.—B. W.

Life of General Sir Charles Napier. By W. Napier Bruce. London: John Murray, 1885. Pp. 428. Size 8¼″ × 6″ × 1¾″. Weight 1 lb. Price 12*s.*

This is a book worth reading and worth buying. The name of Sir Charles Napier will ever live in English history. As the author truly says, "he exercised a fascination over the popular mind, which was perhaps out of proportion to anything which fortune allowed him to accomplish." The four volumes of biography of Sir Charles, written by his devoted brother, are not within the reach of a large number of those who would gladly place on their shelves a less detailed and more condensed story of the life of this hero. Mr. Napier Bruce has met this want and has done his work well.

Life and Times of General Sir Edward Cecil, Viscount Wimbledon. By Charles Dalton. London: Sampson Low, 1885. In two volumes. Pp. 835. 9″ × 6″ × 4″. Weight 4 lbs. Price 30*s.*

Sir Edward Cecil was one of the three Generals who, in the seventeenth century, having served under a foreign flag, were appointed to the position of Commander-in-Chief of an English fleet. As an Admiral he was unsuccessful. The biography of this soldier of fortune is interesting, and a labour of love on the part of its author.

Life of the late General F. R. Chesney, by his Wife and Daughter. Edited by Stanley Lane-Poole. London: Allen, 1885. Pp. 502. Size 9″ × 6″ × 2″. Weight 2¾ lbs. Price 18*s.*

As the editor of this volume reminds us, Gordon, of Khartoum, has truly said, "England is built up by adventurers," and among them the late General Chesney must take high rank. He was one of those men who, having conceived some daring scheme of national importance, perform all the pioneering work in connection with it, so as to place it prepared in the hands of those with whom its adoption ultimately rests. General Chesney's name is thus inseparably connected with the Euphrates Valley Route, and the volume before us gives a life-like picture of its pioneer. The book is very interesting, and yet as we lay it down the thought arises—is it desirable to know that great men have human weaknesses like small men? Perhaps it is so.

The River Column. By Major-General H. Brackenbury, C.B. London: Blackwood, 1885. Pp. 291. Size 7½″ × 5½″ × 1½″. Weight 1½ lbs. Price 7*s.* 6*d.*

General Brackenbury is so well known as a finished writer, that it is hardly necessary to say that he has given us here a plain and admirable account of the

proceedings of the column usually known as "Earle's Column." Two or three similar monographs on other branches of the Nile Expedition would supply a want much felt at the present time.

Regimental Records of the Bedfordshire Militia from 1759 *to* 1884. By Lieutenant-Colonel Sir J. M. Burgoyne. London: Allen, 1882. Pp. 123. Size $7\frac{3}{4}'' \times 5\frac{1}{8}'' \times \frac{3}{4}''$. Price 5*s*.

The Sextant. Pp. 44. Size $5'' \times 6\frac{1}{4}'' \times \frac{1}{4}''$. Weight 3 oz. Price 2*s*.

Longitude by Lunar Distances. Pp. 85. Size $10'' \times 6\frac{1}{2}'' \times \frac{1}{2}''$. Weight 1 lb. Price 7*s*. 6*d*.

Both works by Major H. Wilberforce Clarke, R.E., and published by Messrs. Allen, London, 1885.

The first-named work is an excellent treatise, most clear and exhaustive, and the results arrived at in the examples in the second work are very satisfactory. Exception may perhaps be taken to the wholesale condemnation by Major Clarke of the "cumbrous tables with which navigators encumber themselves," if in these tables are included those valuable ones of Inman. Some of them are, however, decidedly objectionable. Some misprints have crept into the book, but a table of errata is being prepared.

Extract from the Bye-Laws.

Section II.—Composition.

1. Princes of the Blood Royal; Lords Lieutenant of Counties; Governors of Colonies and Dependencies; Officers of the Army, Navy, Marines, Her Majesty's East Indian Military and Naval Forces, Militia, Yeomanry, Royal Naval Reserve, and Volunteer Corps shall be entitled to become Members, *without ballot*, on payment of the Entrance Fee and Annual Subscription.

N.B. Any Officer coming within the above definition, who may wish to become a Member of the Institution, can do so by copying one of the subjoined Forms, and inclosing it to the Secretary:—

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3. Gentlemen above the age of *fifteen*, whose names are on the list of the Commander-in-Chief for Commissions in the Army, or who are probationary for offices connected with the Naval and Military Professions, shall be *admissible*, by *Ballot*, to become Provisional Members from year to year, on payment of the Annual Subscription; and after they obtain their appointments, they may become ordinary Members on payment of the Entrance Fee.

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I give and bequeath unto The Royal United Service Institution, *situated in Whitehall Yard, London, the sum of*

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The Providing of Remounts for our Cavalry and Artillery. By Colonel F. S. RUSSELL, the Royal Dragoons 1045

What can the Volunteers of England do to render themselves fit to take the Field? By Colonel R. HARRISON, C.B., C.M.G., R.E. 1087

How can we make the most of our Ships? By Captain C. P. FITZGERALD, R.N. 1113

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THE COUNCIL of the ROYAL UNITED SERVICE INSTITUTION are very desirous of obtaining the assistance of OFFICERS of the NAVAL and MILITARY SERVICES in carrying out the different Courses of Lectures at the Institution.

The Lectures, and the Discussions which follow them (or an Abstract of them), and Descriptions of Inventions, are published in the Journal of the Institution, subject to the discretion of the Council, and illustrated, when necessary, by Diagrams.

N.B.—Officers who will favour the Institution with a Lecture, or a Course of Lectures, are requested to communicate with the Secretary on the subject as early as possible.

By order of the Council,

B. BURGESS, Captain,

Secretary.